

ST APPLICATIONS

Price: £1.95

The Magazine for Users of Atari ST, STE, Falcon and TT Computers

Issue No. 24, December 1992

THIS MONTH

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- * Imagecopy
- * Shoestring Software
- * Fontswitch v4

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- * Graftix Arts
- * TeX from the top Pt 4
- * Advanced ST Programming

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- * CAD Column
- * STicks and STones
- * Desktop Discussions
- * Programmers' Forum
- * Going On-Line
- * Forum
- * Classified Adverts

Printed in the U.K.

Word-Ex v2.01

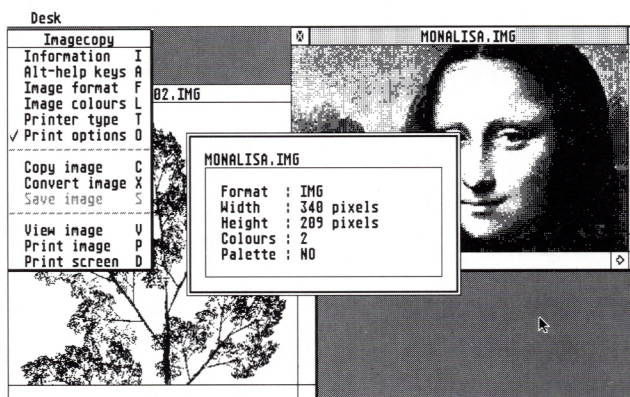
The word puzzlers' companion from Paul Hargreaves is reviewed in this issue by Mark Baines. Word-Ex's extensive facilities include features such as word extractions from one long word, palindromes, anagrams, homophones and crossword checks for missing letters. Eat your heart out, Araucaria!

Shoestring Software

Terry Freedman looks at the Shoestring range of educational software, and Steve Delaney asks proprietor Ian Blair for some background information on the company and its products.

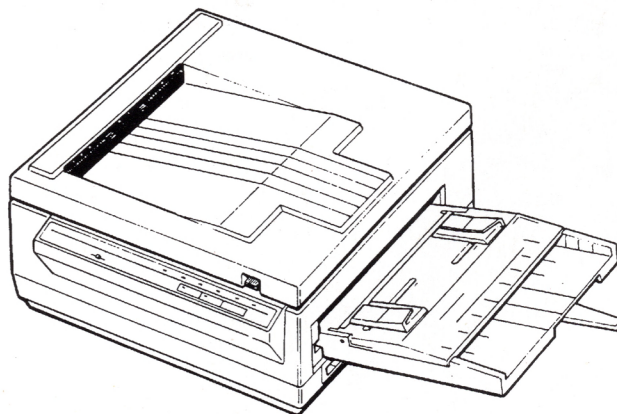
IMAGECOPY

Jeremy Hughes' Imagecopy is far more than a standard screen-grabber, as Peter Crush finds out inside. In addition to making



copies of screen displays, full or partial, it also enables you to view any picture file, print it out, convert it to another format, and get information on the size and type of file you have selected.

Laser Printers



Three of our readers give their impressions of recently bought laser printers: the Ricoh LP1200, the Atari SLM605, and the HP Laserjet IIIP.

News from:



CGS-ComputerBild, the company that brought professional design and retouching software to the Atari ST(E)/TT, now present Phase-4, an inexpensive, integrated, computer animation system that will transform your desktop into a mini animation studio.

Phase-4 applications have powerful animation features, easy learning curves and point and click interfaces, making it the perfect animation solution for amateurs and professionals.

- Supports all ST, STE, and TT resolutions
- Compatible with all Antic Cyber Products

- Point and click GEM interface
- Uses mouse or Prism Tablet

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Retouche The Digital Reprostudio is now only:

£99.00 plus VAT! Also available Epson GT6000 24Bit A4 Colour Scanner incl.

software only £865.00 plus VAT

For further details or to place your order, either complete and return the coupon below, or call us today!



Animation Collection:

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|---------------------------------|---------|--------------------------|
| ● Prism Paint | £62.28 | <input type="checkbox"/> |
| ● Chronos-3D Key Frame Animator | £180.95 | <input type="checkbox"/> |
| ● Rosetta File Translator | £51.70 | <input type="checkbox"/> |
| ● Prism Render | £69.33 | <input type="checkbox"/> |
| ● Render for Sculpt | £45.83 | <input type="checkbox"/> |
| ● CyberSculpt | £45.83 | <input type="checkbox"/> |
| ● Galactic Tool Chest | £45.83 | <input type="checkbox"/> |

Design / Retouching Collection:

- | | | |
|--|----------|--------------------------|
| ● Retouche | £121.00 | <input type="checkbox"/> |
| ● Retouche Professional B/W | £799.00 | <input type="checkbox"/> |
| ● Retouche Professional CD | £1260.78 | <input type="checkbox"/> |
| ● Didot LineArt | £239.70 | <input type="checkbox"/> |
| ● Didot Professional B/W | £380.70 | <input type="checkbox"/> |
| ● Didot Professional CD | £781.38 | <input type="checkbox"/> |
| ● GT JetScan 3i (Epson Scanner Software) | £180.95 | <input type="checkbox"/> |

Order Form

CGS-ComputerBild, 19 Ledbury Place, Croydon, CR0 1ET. Tel: 081-686 8121 Fax: 081-666 0405

NAME:

ADDRESS:

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TEL: MACHINE TYPE

ALL PRICES INCLUDE VAT & UK POSTAGE.

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- ☐ Please charge my: Access/Visa/Mastercard
- Card Number Expiry Date
- Signature

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Read Me 1st

Subscription Expired? If you received this copy of *ST Applications* through the post, check the first line of your address label carefully: if it reads STA24, then your subscription has expired with this issue; if the information line reads "Complimentary Copy" you have been sent a free evaluation copy of *ST Applications*. Either way, you must take out a new subscription in order to receive further issues.

Information

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New Address:

Mail sent to our old Stoney Street address will be forwarded and our telephone number is unchanged.

Owing to lease restrictions, we are no longer able to make retail sales from our offices. Callers by appointment only, please.

Advertising

There is a limited amount of space for commercial advertising in each issue of *ST Applications*. Contact Nicky Wilson on 0602-410241 for further details and to request a media-pack. Subscribers can place free classified advertisements - see page 57 for details.

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Subscription and Order form will be found on page 57.

Overseas Distribution

Distribution overseas is dealt with via our agents:

Worldwide Magazines, Unit 19, Chelmsley Wood Ind. Est., Waterloo Avenue, Chelmsley Wood, Birmingham B37 8QD. Tel: 021 788 3112; Fax: 021 788 1272.

Canadian office: Tel: 519 539 0200; Fax: 519 539 9725.

Contact us for details of your nearest *ST Applications* stockist.

Disk Mags

These are bi-monthly compilations of the best PD software to come to our attention in the preceding couple of months - not magazines on disk. The next Disk Mag, DMG32, will be dispatched a few days after this issue is sent out.

CREDITS

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Contributions

The articles in *ST Applications* are written by users for users. Everyone reading this magazine will have something to contribute; even if you do not feel able to do a full-length review or article there is the Forum section for short hints, tips and questions. If you are interested in writing for *ST Applications* - regularly or irregularly - please write for a copy of our terms and conditions. We always do our best to reward quality work with appropriate remuneration.

Atari News

Despite an 'official' release date of September '92 for the Falcon, it is unlikely that you will be able to buy one for Christmas. Leading Atari distributors SDL (the trade division of Silica Shop) recently confirmed that the Falcon will initially be released in November with 4Mb of memory and a 64Mb hard drive. The 1 Mb base model with no hard drive is not expected until 1993. Now that's a disappointment for everyone with a small wallet and big ideas! There are rumours circulating that the delay is due to bugs in MultiTOS. If this is the case then it's uncharacteristically responsible for Atari to hold back the release until they get it right! Another piece of bad news is that only 10,000 units are expected to enter the UK this year as opposed to an earlier target of 15,000.

More rumours are circulating about a price drop on the Falcon next spring. Atari are remaining tight-lipped about a price drop for obvious reasons but have confirmed that the Falcon will appear in a new casing at about that time. A software bundle is expected to be included with the 're-designed' machine and the price is expected to be £399. It is expected that the bundle will consist of a mixture of games and productivity titles. A Falcon branded CD drive is expected to appear before the end of 1993. Although it will only work on a Falcon, it will be fully compatible with the CD format used on the PC. No price has been set for the CD drive, although Atari have confirmed their intention to release it and the fact that it will be compatible with 'the dominant CD format'.

Following last month's posting of Atari Corporation's disappointing

second quarter results, the company are tightening their belts in countries which have a smaller user base and are concentrating on the UK, Germany and France. A result of this cost cutting has been the closure of Atari Sweden, where only 60,000 STs have been sold since the machine was released. Arch rivals Commodore have made a similar move and cut their Swedish workforce by a third. The current economic situation in Sweden where interest rates are as high as 500% has obviously played a equally large part in both companies' decisions.

In line with Atari's cut-backs worldwide, they have closed down their research and development centres in Dallas and Chicago. All sixty staff employed at these locations have been offered jobs at Atari HQ in California. From now on, all research and development will be based at headquarters in an effort to cut costs. More cost cutting moves are expected to take place throughout Europe over the next few months.

With the release of the Family Curriculum II at £299, Atari claim that they are now selling three times as many 1040s as 520s, the opposite situation to that of two years ago. They have billed the Family Curriculum I as having been the best selling ST pack ever and it appears that this pack was instrumental in shifting the bias from the 520 to the 1040. The new pack comprises:

- * Hyper Paint II
- * Music Maker II
- * Ani-ST
- * FirST Basic
- * First Word

with two games and a number of educational titles aimed at various age groups.

Mihocka Returns With the Gemulator

After selling the rights to Quick ST to Codehead Technologies, Darek Mihocka and friends (of Branch Always Software) have made a welcome return to the ST scene with a new company, Purple Mountain Computers Incorporated. The most exciting of their products simply has to be The Gemulator (see news item in issue 20). It runs on a '386 PC or better with at least 4 Megabytes of memory and a VGA monitor. You can install four version of TOS at once, making it ideal for testing purposes. All three ST screen resolutions can be used on one VGA monitor (it even runs on large screen monitors) and you have access to the STE's 4096 colour palette. It is Windows compatible and can access the PC's hard drives and other peripherals. PMC claim that most major software packages will run on The Gemulator and their list of compatible titles include Calamus, PageStream, Degas, Sierra graphic adventures, Flash, Sim City, GDOS/G-Plus, Tempus 2, HotWire, Warp 9, LDW Power and Word Writer. A '386 running Gemulator runs slower than a standard 1040ST but a '486 will emulate the ST running at full speed or faster (depending on the hardware used). The Gemulator comes on an 8-bit PC card and is supplied with TOS 2.06 ROMs and the required software. It is on sale now and costs \$299.95 (shipping extra); a demonstration video is available for \$10.

PMC have taken over the distribution and future development of the communications package Stealth. It has had all known bugs removed and the on-disk manual has been completely re-written. In addition, it now runs on all TT resolutions, the registration manual has gone and the manual on disk details many features not even mentioned in the previous one. The upgrade is being released as Stealth PMC v1.3 and a free upgrade is being offered to registered users of previous versions. Just send in your original disk and your registration number (or duly completed registration card if you have not already registered). Please include sufficient

international reply coupons to cover the return postage. Regrettably, PMC forgot to tell us how much it costs to purchase Stealth PMC!

ST News is the name of a free newsletter from PMC. It looks at the latest software, hardware and news on the ST scene. It also offers bargains in second hand software and hardware. To get your free copy just send a note of your name and address along with \$5 (or equivalent in sterling) to cover postage and you will receive the current issue along with any future issues as they are released. Please pay by cash rather than cheque as non-US cheques cannot be accepted.

Another exciting new product from PMC is the Freedom Floptical Drive. It is an optical drive with removable data cartridges (a similar idea to Atari's Megafile 44) with each 3.5" disk holding 21 Megabytes of data. It is very small, measuring only 4.7 x 7.8 x 2 inches. It can read normal 3.5" 720k and 1.44Mb disks at two to three times the normal speed! The Freedom Floptical Drive comes complete with The Link (see news item in issue 22) and the latest software from ICD. They can supply an adaptor which will run on different voltages for 'foreign' users. The Freedom Floptical drive was launched at an introductory price of \$399 (shipping extra) but will probably have increased by the time you read this. It comes with one 21 Megabyte floptical disk and additional disks are available for \$24.95 each (sold in packs of two). Contact PMC for shipping charges outside the USA.

The full range of products currently offered by PMC is as follows:- Calamus Font Guide '93, Freedom Floptical Drive, Gemulator, over 2000 computer books, over 750 re-cycled software and hardware items, ST News, Stealth PMC, Xtra-RAM Deluxe memory upgrades and a PD/Shareware library of over 1400 disks for the ST and PC. For more information on any of the above products, contact:

Purple Mountain Computers Inc.
15600 NE 8th St, #A3-412
Bellevue, WA 98008, USA;
Tel/Fax: 206 747 1519.

Choosing a memory upgrade for your Atari ST?

The XTRA-RAM *Deluxe* is the answer!

Is your ST always running out of memory? Marpet Developments' XTRA-RAM *Deluxe* is the easy to fit and simple to upgrade memory expansion that you've been waiting for. With over 5,000 satisfied customers throughout the world, why consider anything less than the best? Using industry standard SIMMs (like ST^Es) the XTRA-RAM *Deluxe* lets you upgrade all the way to 4Mb.

Installation of the XTRA-RAM *Deluxe* couldn't be easier. Following the instructions laid out in our simple to follow manual which is written with the non-technical reader in mind, you disassemble your STF; STFM or Mega ST, plug in the XTRA-RAM *Deluxe* into two places inside your computer and reassemble it. The whole process takes around one hour and most machines will not require any soldering whatsoever.

The XTRA-RAM *Deluxe* works with all Memory Management Unit (MMU) chip types, whether they are soldered down or socketed. If your ST has a soldered down Video Shifter chip or a 101601 type MMU chip then some soldering will be required.

Designed and manufactured here in the UK, each XTRA-RAM *Deluxe* upgrade is supplied with a full two year warranty together with a sophisticated RAM Testing program so that you know with certainty that your installation has worked. Full technical support is simply a telephone call or letter away, whether you live in England or Singapore.

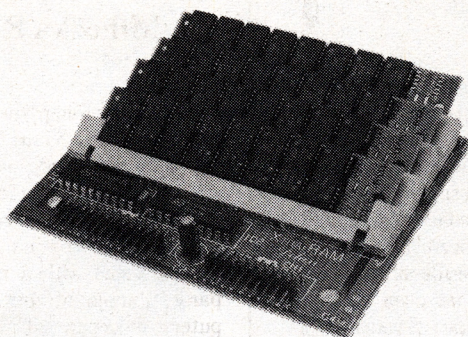
Don't restrict your upgrade to just 1Mb. Make sure that you choose the XTRA-RAM *Deluxe* which can grow with your needs. Available today from stock at most leading Atari Dealers, or direct from Marpet Developments.

Here's what the leading Atari Magazines had to say about this top selling upgrade:

Atari ST Review: "One of the best boards available for the ST."

ST Format: "The Xtra-RAM can be fitted easily ... even by a novice." 87%

<i>Deluxe</i> with 0Mb	£ 34.99
<i>Deluxe</i> with 1/2 Mb	£ 59.99
<i>Deluxe</i> with 2Mb	£ 99.99
<i>Deluxe</i> with 4Mb	£159.99
Plus £3 Postage & Packing per order	



XTRA-RAM *Deluxe*

Searching for a reliable Clock Cartridge?

The Forget-Me-Clock II is the original and best!

With the Forget-Me-Clock II plugged into your ST or ST^E's cartridge port, the system clock (used by the Control Panel) and keyboard clock will automatically be set at turn on or reset. No longer will you have to waste time setting your ST's clock each day.

Why consider poor quality imitations of the original? The Forget-Me-Clock II remains the top selling clock cartridge - the user's choice! It features a full cartridge pass-thru enabling it to remain totally invisible so that another cartridge can be used as normal.

Installation couldn't be simpler - you just plug it in and turn on your ST. With a full two year warranty, including the long life lithium cell battery, why not join almost six thousand satisfied users?

Here's what some of the leading Atari Magazines had to say about this top selling clock cartridge:

Atari ST Review: "A good, well engineered product. Get one now." 91%

ST Format: "The famous Forget-Me-Clock II Cartridge" 89%

Forget-Me-Clock II Cartridge £17.99
Plus £2 Postage & Packing per order



Buy the Xtra-RAM ST^E Memory Upgrade!

There are many suppliers of memory upgrades for ST^E machines. Not all cater for your particular needs. Most ST^Es require Single In-line Memory Modules, commonly referred to as SIMMs. However, a number of machines require SIPs - these are like SIMMs but use pins instead of an edge connector.

Each and every ST^E upgrade supplied by Marpet Developments contains all that is necessary to upgrade ST^Es requiring either SIMMs or SIPs. This is achieved through the use of a special adaptor. With the Marpet ST^E upgrade there is no risk of buying the wrong kit!

The Atari ST^E computer uses 256k SIMMs (or SIPs) at a speed of 150 nano seconds; and 1Mb SIMMs (or SIPs) at a speed of 120 nano seconds. Buying faster SIMMs or SIPs does not increase performance on your ST^E, but faster ones may be required if you later upgrade to a different computer system. Marpet always supply SIMMs rated at speeds in excess of the ST^E's requirements.

Each ST^E memory upgrade supplied by Marpet carries a full two year warranty. Here's what one of the leading Atari Magazines had to say about this top selling ST^E upgrade:

ST Format Rating: "Easy to install." 86%

XTRA-RAM ST^E 1/2 Mb Upgrade £ 24.99
XTRA-RAM ST^E 2Mb Upgrade £ 69.99
XTRA-RAM ST^E 4Mb Upgrade £129.99
Plus £2 Postage & Packing per order

Spare SIMM/SIP Adaptors £1.25 Each
Plus £1 Postage & Packing per order

Marpet
DEVELOPMENTS



Meadowfield Farm
Fellbeck

Pateley Bridge HG3 5ET
Tel: 44 (0) 423 712600
Fax: 44 (0) 423 712601

News Brief

Lapcat From Arnor

Lapcat was originally designed by Arnor as an easy to use package for transferring files to and from the Amstrad NC100 Notepad PC. It soon became apparent that it could be used to transfer to and from PC, ST, Amiga and PCW computers with relative ease. Lapcat consists of software and a hardware interface which transfers files quickly using the parallel port. The cost for one type of computer is £40 and the software for each extra type of computer costs an additional £10. For further information on Lapcat contact Arnor Limited, 611 Lincoln Road, Peterborough PE1 3HA; Tel: (0733) 68909; Fax: (0733) 67299.

Riding Departs

All Formats Computer Fair organiser John Riding is no longer with the company. Stand sales and exhibitor organisation is now handled by Patrick Hall on 0608 663820. There have been a couple of changes to advertised venues. These are as follows:-

8th November: University Union, Park Place, Cardiff

21st November: De Montford Hall, Granville Road, Leicester

13th December: University Union, Park Place, Cardiff

All Formats Fairs continue to run almost every Saturday and Sunday from now until just before Christmas. See the news item in issue 21 (allowing for the above amendments) for dates and location of your nearest fair.

Calamus User Magazine

A new independent magazine has been launched for Calamus users. It is called, unsurprisingly, Calamus User, and will be produced on a bi-monthly basis. It will feature all the latest news from the Calamus world as well as reviews and previews of the latest Calamus related products. A hints and tips section will help bewildered users to get the most from their package and an open forum will allow users to exchange ideas and help each other. Calamus User will have its own mailbox on CIX, Compuserve and many bulletin boards. A single

issue costs £2.00 (£2.50 overseas) and annual subscription costs £9.00 (£12 overseas). To order a copy of the launch issue or for more information contact Calamus User, PO Box 148, Deal, Kent CT14 7QN.

HiSoft First On Falcon

HiSoft will be releasing one of the first Falcon-specific packages this month. It is called TruePaint and is the first in what will no doubt be a long line of art packages for the Falcon. The author is reputed to be John Gymer, who wrote Canvas for Microdeal. It works in all Falcon resolutions right up to the ultimate, true colour in overscan at 768 x 480 (a screen takes up over 700k in this mode)! Rather than using the multiple screen or multiple frame approach, TruePaint employs a multiple window environment with menus, toolbox and keyboard shortcuts. It has the full range of drawing tools and a large variety of effects such as smear, wrinkle, smooth and rainbow. The zoom function will operate in full screen mode with edit, colour picker and bezier curves. TruePaint will feature animation, FSM GDOS support and support IFF, TIFF and JPEG formats amongst others. The package will be available for about £40.00.

More From Rufus Developments

Following on from the success of HP Chrome (see news item in issue 21), Rufus Developments have released BJ Chrome for the Canon Bubblejet. It provides the same features as HP Chrome but at a greater resolution (360dpi as opposed to 300dpi on the Deskjet). Essentially, what BJ Chrome does is to print a Degas or Neo picture file on a Canon Bubblejet in full colour. It should be noted that a sheet feeder is required in order to print in colour. Like its predecessor, BJ Chrome is being released as Shareware with registration being a mere £5. HP Chrome has also been updated and now prints faster, uses less ink, gives a better quality printout, gives a better display on a mono monitor and is now compatible with large screen monitors. These enhancements have also been incorporated into BJ Chrome. Both programs are available at normal PD prices i.e. £1.45 per disk, from The ST Club.

New Printers From Star

Star Micronics have introduced two new printers and dropped the price on two existing models. The

LC-100 is a 9-pin colour printer with eight fonts and electronic dip switches. It costs £219 and star claim it to be the lowest priced colour printer around. The LC24-100 is the 24-pin version of the LC-100 at £239. Its features include a 16K buffer, ten fonts, electronic dip switches and a new compressed data mode which Star claim will increase data transfer from the computer by up to 25%. The existing models which take a price cut are the LC-20 which drops from £199 to £189 and the SJ-48 bubblejet which drops £46 to £299.

Microcare Closes Down

MicroCare have ceased their operations on the ST and moved on to the PC as of 26th September 1992. They released three disks over a year ago and have asked that these now be considered ordinary Shareware with users sending a donation to their favourite charity. Anyone still distributing these disks as licenceware should forward any outstanding royalties to a charity of their choice.

68060 Within A Year!

As reported in issue 18, Motorola

are to release yet another addition to the 68000 series of microprocessors. It has now been confirmed that the 68060 will be released before the end of 1993 and will run at 100 MIPS (millions of instructions per second). The ST runs at 0.25 MIPS and the Falcon runs at 3.84 MIPS, so you can see that a 68060 is a major step forward, something we won't see in Atari machines for many years to come (if at all).

The 68060 will be in direct competition with Intel's P5 and IBM's forthcoming RISC PowerPC chip (which is being manufactured by Motorola). The ST and Amiga currently use the basic 68000 chip, with the Falcon and TT running the 68030. The first PowerPC will run at 66Mhz and is due for release in 1994. The 68060 will out-perform the PowerPC from its launch! Apple Corporation, Motorola's biggest customer for 68000 series microprocessors, have already opted for the PowerPC technology for their next generation but it is expected that the announcement of the 68060 may be sufficient to change their decision.

Ladbroke Computing

Ladbroke Computing have added a number of products to their existing range and reduced the prices on several existing products. The Data Pulse Plus 52Mb drive has dropped by £20 to £319.99 and two new drives have been added to the range. These are the 40Mb at £289.99 and the 80Mb at £379.99. The Data Pulse Plus range now include a SCSI expansion port, allowing more than one SCSI device to be connected to your ST. It also allows for SCSI hard drives (which do not require a host adaptor if connected to a Falcon) to be swapped between the ST and the Falcon.

The latest addition to the Data Pulse range is the Data Pulse Plus 21Mb Floptical Drive. Specifications seem identical to the Freedom Floptical Drive from PMC in The States so I won't repeat them. The stand alone unit costs £439.99 and floptical disks cost £24.99 each. Existing Data Pulse/Data Pulse Plus owners can upgrade (i.e. send back their hard drive and get it back with a floptical drive/hard drive combination) for £319.99. Various hard drive/floptical drive combina-

tions will also be available. These will range from 40 Mb HD/21 Mb floptical at £599.99 to a 127 Mb HD/21 Mb floptical at £739.99, excluding the floptical disk.

Memory upgrades are also on the way down. The 2Mb and 4Mb Aries RAM upgrades for pre-STE machines cost £79.99 and £129.99 respectively and SIMM upgrades for the STE cost £11.99 (0.5Mb), £47.99 (2Mb) and £92.99 (4Mb). A new Golden Image external ST drive which does not include a track counter now sells at £54.99. Finally, a rechargeable battery pack for the Stacy is now available from Ladbroke for £49.99. It gives up to 2 hours of running time and weighs 2.2 lb. Slow charge takes 14 hours and fast charge takes less than 4 hours. The battery pack fits into the Stacy's battery compartment and is re-charged by the machine's power supply.

For details of these and other Ladbroke and Golden Image products contact:

Ladbroke Computing International, 33 Ormskirk Road, Preston, Lancs. PR1 2QP.
Tel: (0772) 203166.
Fax: (0772) 561071.

Cambridge Business Software.

Moat House Business Centre • Melbourn Science Park • Melbourn • Royston • Herts SG8 6EJ

• SOFTWARE
• HARDWARE
• TRAINING

THE
ATARI ST
PEOPLE

ACCOUNTS

Home Accounts 2	£44.90
Cashbook Combo Pack	£59.95
Personal Tax Planner	£34.95
System 3 (Inv/Stock)	£39.95

DATABASES

Data Manager Professional	£29.95
Digita DGBase	£39.95
Prodala	£59.95
Super Base Personal	PHONE
Super Base Professional	Special £89.95

DESKTOP PUBLISHING

Pagestream v2.2	£159.00
Calamus v1.09n	£129.00
Calamus SL	£575.00
Timeworks DTP v2	£89.95
EZ Text Plus	£19.95
EZ Text Professional	£39.95

SPREADSHEETS

LDW PowerSpreadsheet v2	£99.00
K-Spread 4	£95.00
K-Spread 3	£69.95
Digicalc	£29.95
Logistix v1.2	£69.95

ART/GRAPHICS/DESIGN

Degas Elite	£19.95
Hyperdraw	£29.95
Hyperpaint v2	£29.95
Megapaint II v4	£85.00
Megapaint II Professional v4	£199.00
Easy Draw 2	£39.95
Supercharged Easy Draw 2	£59.95
Cyber Studio (CAD 3D v2)	£39.95
Cyber Control	£32.95
Cyber Paint v2	£39.95
Spectrum 512	£24.90
Technobox Drafter v2	£179.95

COMPUTERS/MONITORS/PRINTERS

520STE Start Pack	£249.00
520STE upgraded 1Mb	£259.00
520STE upgraded 2Mb	£285.00
520STE upgraded 4Mb	£359.00
1040STE Family Curriculum II	£299.00
1040STE Music Pack Incl Pro 24	£299.00
Mega STes	From £399.00
TT030	From £890.00
Falcon 030 1MB	PHONE
Falcon 030 4Mb 65HD	PHONE
SM124 Mono Monitor	£129.00
Atari SC1435 Colour	£209.00
Philips CM8833 MkII Monitor	£199.00
Ricoh LP1200 Laser Printer	£795.00

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1 2 3 4 5 6 7 8 9 10

F. KEYS SHIFT+F. KEYS KEYPAD

Start Rec. Stop Rec. Extend Seq.

Delete Seq. Del. 1981 Delete All

Options File Op.s Info.

View/Edit EXIT Disable

Speed Mouse Copy Seq.

MOUSE MASTER OPTIONS

Keys used to record events (1-8)

F. KEYS SHIFT+F. KEYS KEYPAD

Pause (1/50s) for sequence 1: 15

Acknowledgement alerts YES NO

Warning alerts YES NO

OK

Mouse Master allows mouse operations and commands to be recorded in the computer's memory and replayed at the touch of a key just as if you were moving the mouse. This overcomes the need to break your train of thought by stopping what you're doing and laboriously making the mouse commands which you use often. Ten different sequences of mouse instructions can be held in memory

at the same time - each containing up to 100 commands, or 'events' such as clicking, double clicking and dragging.

Mouse Master can be used with any program which uses the mouse, though most of the package's facilities are available from a Desk Accessory, so it is best used with GEM based programs or the desktop.

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Three of our readers have recently bought laser printers, and here we present their reactions to installation and performance.

RICOH LP1200

For some time I have looked with envy at laser printers. As the price of lasers fell I decided that this was the time to buy.

In one of the monthly ST magazines was a full page advert for a 400dpi, six pages per minute, 2MB standard Ram laser printer - all for £699 + VAT. The advert was from Silica Systems and so I immediately sent off the literature request. A couple of days later a large envelope arrived. It contained a copy of the advert plus a couple of sheets containing further information from Ricoh.

The specifications were very high, but not wanting to pay out large amounts of cash on something I had never seen I immediately set out to see one in action.

Unfortunately, I could only see one with an IBM using Windows (and not even that put me off). I then 'phoned Silica Systems in Tottenham Court Road and arranged to send a couple of files to print. I also 'phoned Ricoh UK who sent me further prints at both 300 and 400dpi. A couple of hours after receiving these prints I phoned Silica Systems to order my printer, and twenty-four hours later I was attacking a large cardboard box.

Inside was the laser, development cartridge, OPC cartridge, paper cassette, output tray, manual, set up instructions, registration documents and a small booklet showing a number of Agfa Intellifont typefaces. Also included is the one-year on-site maintenance registration.

Fortunately my six-year old son, James, was helping me to set it up, and so within fifteen minutes I was plugging the printer into the parallel port of the computer.

The printer is quite compact, having much the same footprint as

my 1124 Panasonic. There are two input ports, one parallel and one serial, and these are placed on the rear of the printer on the right hand side. Additional ports may be added to allow it to be connected to a LAN or a mainframe. On the left of the rear side is the power socket. The cable has a plug fitted so there is no need to look for something you don't use very often. The power switch has very sensibly been placed on the top at the rear left hand side. An ozone filter comes as standard and should be replaced after each change of the development cartridge. (The printer should not be used without one.) Situated on the front of the printer is the I/C card slot. This slot will take extra function cards - e.g. fonts or emulations - but as of yet I don't know of any being available.

Paper is fed in from the A4 cassette which slots into the front of the printer and this can hold approximately 100 sheets. The paper path is straight and the output tray sits neatly on the rear collecting the sheets face down. The printer can use a variety of paper sizes ranging from A4 to US executive. The manual feed accepts any paper within the following ranges: width 98-216mm, height 148-356mm. It will also print on envelopes postcards and transparencies. An optional sheet feeder is available and this will allow paper/card up to a weight of 157g/m² to be printed. The sheet feeder will hold a maximum of 150 sheets.

As the laser contains 2MB RAM as standard you can immediately print A4 pages at 300 DPI but it should be noted that it cannot print it at 400 DPI until a further 2MB RAM is fitted. Also at present there are no drivers available for the ST that will utilise the printer's 400dpi resolution.

Emulations

The printer comes with a number of resident emulations.

These include:

- * HP Laserjet III (PCL-5)
- * HP-GL2 (printer/plotter language)
- * Epson FX-850
- * IBM Proprinter XL24E
- * Layout document description language
- * Turbo mode (fast bit-image transfer)
- * Hex print out.

The HP III output would appear to be identical to that from an HP IIIP. Printing speed with PageStream was reasonably fast taking approximately 2'30" to print a 260KB A4 page at 300dpi. Copies of that page would then print every 10 secs. It should be remembered that PageStream processes one page at a time so it will take 2'30" for each page in a document. Printing multiple copies of the same document should be set in the PageStream printing dialog as this overrides the function resident in the printer. First Word Plus prints using any of the emulation modes with the appropriate driver. In all cases it would print after 15 secs, multiple copies would again print after 10 secs. The HP III driver will not print graphics or extended text but will print the other text effects correctly. Changing the printer to the Epson emulation enables you to print graphics correctly. To be honest I prefer the the output from the FX 850 emulation as the HP will only output in Courier 10 while the FX uses the font set in the printer. The other programmes that I use that do not have a HP driver appear to work very well using the FX emulator. The quality of the output is very much dependent on the quality of the driver.

Unfortunately, the only program that I have which can use the

HP plotter mode is GFA Draft Plus. I say 'unfortunately' as I have only used it once (it was free with another computer magazine) and I have no manual. I did eventually get it to work and printed out a picture of the space shuttle. It appeared fine, but I have not seen anything to compare it to.

The other emulations available will probably not be utilised by the average user.

Layout is a language specifically designed for document description and text formatting. Commands can be embedded within an ASCII text file and these can control all modes of the printer.

Turbo mode appears to be a command set that is purely concerned with the processing of graphical images. This mode enables raster graphics to be printed at the normal speed of the printer. Whether this mode could be utilised by programs such as PageStream or Calamus remains to be

seen and it is up to the software houses to write the appropriate driver.

Lastly, in Hex mode the printer will print out all the data in hexadecimal form, useful for diagnosing software problems.

As mentioned earlier, the printer contains a number of resident fonts. These include 8 scalable fonts (CG Times and Univers Medium in a variety of styles and weights) and 14 bit-mapped fonts (Courier, Printer, Prestige, and Gothic in a variety of styles and sizes). Any of these fonts can be used by First Word Plus if set in the printer as a default font.

Printer Configuration

Configuring your printer to suite your preferences could not be easier. The front control panel is extremely easy to use. By pushing the mode button you can step through all the control settings, changing them as necessary using the arrow buttons. These settings

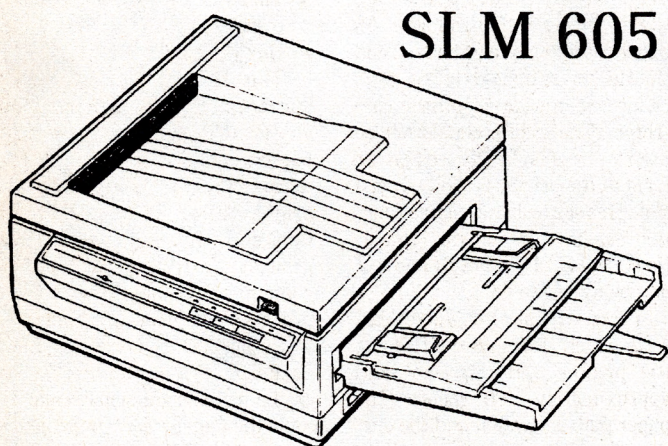
can then be stored in any of 3 custom settings. When starting the printer it will read the settings in custom 1 and use these as a default. In my case it is the HP III emulation with the FIAL (Print Enhancement) turned on. When the printer arrives from the factory this setting is turned off. In setting 2 I have the FX-850 configuration and in setting 3 I have the HPGL2. Changing from one setting to another is simply achieved by pushing three buttons.

At first I was somewhat nervous changing these settings until I realised that you can reset it to the 'Factory' configuration at the push of a couple of buttons. Finally, on the control panel is the LED status display, together with the error, data and online indicators. The status display shows all the information concerning the current state of the printer. It also displays the configuration settings when in the correct mode. In normal use it will

show the paper feed source, paper size, print protocol (i.e. emulation), and the printer status. When printing the ready display will show which page is being printed from which print job, eg. 4.2 (page 2 of job 4).

Errors will also show on this LED when they occur, although at the moment none have, thankfully. I have had a paper jam but as the paper path is straight this was cleared very easily. I think it was probably due to using some old photocopier paper that should have been thrown away some time ago.

All aspects of the printer operation are amply and clearly set out in the manual, which I found easy to read and use. I am sure that should you buy this printer you will not be disappointed. In fact any fears that you may of had concerning the outlay will soon disappear as you watch the superb prints roll out.



Atari's original laser printer, the SLM 804, has been superseded by the SLM 605. Considerably more modern and sleeker in its appearance than its forebear it may be, but how does it compare in operation? And just how does a laser printer work? Derryck Croker has the answers...

I shall take the last of these questions first, to help prepare us for the quirk that both of these two lasers exhibit. The ordinary laser printer, be it Hewlett Packard, Epson, Ricoh or any of the names that can be found in the magazines, all function in much the same way. The codes that the micro sends to the printer are received by its own micro-processor where they are turned into the dot patterns that make up the required image, be it letters or artwork. Once the process is complete, the image is transferred to a photoconductive drum by means

of a laser beam. This beam is scanned across the drum using a multifaceted spinning mirror, and by suitably switching the beam on and off the required image can be built up (some printers employ an array of LEDs instead). Simultaneously with the start of the scanning process the toner (a very fine black powder) is attracted to the drum by virtue of an electrostatic charge that is applied to the drum from a corona discharge wire fed from the printer's high voltage power supply. The drum's photoconductive surface loses its charge where the beam hasn't scanned,

which corresponds to the non-printed parts of the page. That means that the toner is attracted only to that part of the drum corresponding to the printed areas of the page, and that in turn is attracted to the paper as it passes via its own corona discharge unit past the drum. The paper then is transported past a heater unit which fuses the resin content of the toner to the paper to 'fix' the image.

The exception to this is the SLM 804. Here toner is applied continuously to the drum and is scanned off where there is to be white space on the page. This leads towards a rather messy interior to the printer as well as the necessity of renewing the small bottle that collects (most) of the excess toner at each toner change. This system does not appear to offer any advantage to that outlined above.

Once the printing process starts the entire image of the page has to be available to the laser's scanning electronics, and so the image has to be stored within the printer's own RAM. An ordinary, reasonably well filled page will require around 1MB of memory at the average printer's resolution of 300dpi.

Current printers offer facilities like HP's R.E.T. (Resolution Enhancement Technology). This is designed to apparently increase the printer's resolution by smoothing off the staircase edges of some shapes, but in itself requires extra memory. Others offer a

straight 400 dpi resolution without recourse to this processor-intensive process of "jaggy filling-in". These require their own printer drivers to give this resolution, something which the Atari owner may have to wait some time for.

That's the background. Atari's "Power without the Price" policy means that both their printers come without any internal memory at all, which means that the host computer has to be used to build up the image before it is sent out to the printer, and so for all practical purposes an ST populated to at least 2 and preferably its maximum of 4 megs is required. As a bonus though, and in my opinion it is a big bonus, the means of transfer of this image to the printer through the DMA (Direct Memory Access) port is at high speed - much higher than the Centronics printer port is capable of. That means that a page from a program such as MegaPaint can be in your hands within a few tens of seconds after clicking on "print page".

Unpacking the printer

Neatly contained within a cardboard carton the separate parts are well packed, and with the aid of the 62 page hardware manual are quickly assembled into the complete printer. Really, there isn't much to say about this, as it is a quick and easy process - except that I found that there was an extra DMA lead supplied, which

went some way towards compensating for the Continental 2-pin plug supplied with the mains lead.

Connection

In common with the '804, the '605 is just a printer mechanism in a case, and so it requires a controller to operate. This is supplied (together with some software, which we shall investigate later) in a separate carton, and is to be plugged into the ST's DMA port. The manual's instruction is to have this controller as the first in a daisy chain of laser and hard drive, but there is a warning in "Your Second Manual to the Atari ST" that this can cause corruption to saved files, and so I have mine connected hard drive first, then controller. This has caused absolutely no problems whatsoever, but does mean that you must ensure that your hard drive has a DMA throughput. Of course there will be no problem at all should you not have a hard drive - which seems unlikely if you are investing in such a printer.

Another quirk of the '804 was the requirement to have the printer powered up during the working session. This was due to the need to keep the controller powered so that it would not "drag down" the DMA port and prevent the disk drive system from working. The main problem with this approach was the noise (and heat) emitted by the printer's fan-forced ventilation system. Two ways round this problem were to lower the rear flap (thus shutting down the printer's main circuits) or powering the controller separately so that the printer could be left off until required for duty. The '605 has just the same requirement, except that now the printer is so quiet it may be left switched on without any GBH to the ear whatsoever. Such is the compatibility between the two printers that the '605 uses the same controller as the '804. Indeed, when I changed to the new printer I plugged it into the old controller, which meant that I could continue to use the advanced LaserFace that I presented way back in issue 3. Now powered from the hard drive's PSU, the 'Face saves delving around the back for the mains switch until I really have to!

Using the printer

That last sentence sums up the '605 for me. If you have only limited room it is not nearly so convenient to position as its predecessor, where connections were made to the rear and the mains switch was to the left. Paper was fed from a

cassette inserted underneath the printer and ejected at the top, the whole making for a compact if tall monolith that could be slid in underneath the desk.

The '605 on the other hand isn't as tall, but the clip-on paper tray not only makes it much deeper but is also vulnerable to being stepped on or having tea spilled into it. This and the fact that the mains and data cables plug in at the right side make this a machine that is best kept on the desk top, where room will also have to be found if you want to use the straight-through paper path chosen by a small lever at the back. This is used for thick paper or card (and I have successfully used art paper from a stationer's for printing custom cassette inlay cards), or the more conventional face-down collection from the top.

Grouped along the left side of the printer are the operational controls - starting with the paper size selection switch. The other controls, in the form of membrane switches with internal LED confirmation, adjust the printer for thick paper or set it up for manual printing. Manually fed paper is fed between two coupled, sliding and centralising guides on top of the paper cassette, and the only indication that the printer is ready to print from this condition is the busy light illuminating on the SLMC804 controller. At this stage the print button stirs the printer into life. During my ownership of this machine I have found that there is no necessity to use this control (which is meant to disengage the cassette), since the printer will automatically take paper fed here in preference - which may be helpful as some programs would not print anything on paper fed manually on the '804. So thus far we have a "thick paper" button on which I will suspend judgement, and apparently superfluous "manual" and "print" buttons. With no assistance from the manual, one is forced to guess that they have more relevance to other printers using the same mechanism (which is a Mannesman Tally - no more waiting on out-of-stock Atari toners!). Of more importance are the error reporting lights.

These are much as would be expected on any similar machine, and give an indication of paper empty or jam, and toner empty. Inside the printer, and renewed with every drum change, is a small plug-in electronic counter. This drives an LED which changes colour according to drum use: at 7500 it is green and at 9900 it is

orange. The manual advises that a new drum should be sought at the orange LED, and it is to be hoped that the "change drum" LED on the control panel is a mimic of this. At red the 10000th page has been printed and at 10005 the module will not allow any more printing to occur. That seems a little draconian to me. Also inside are to be found the more usual total number of pages printed counter and the contrast adjustment control.

There are very few other programs on the PD market for the SLMs but one deserves special mention, even though it isn't specifically for the SLM. It's a shareware item called Gemvelope, and I think I found it on one of the monthlies' cover disk. With only a couple of minor features disabled and the display of extra dialogue boxes it will allow the printing of envelopes on this or any other printer, provided that GDOS has been loaded and a suitable printer driver and fonts are present. The program will accept input from database files as well as the choice of consecutive lines from an Ascii file (to extract addresses) and manual entry. It rotates text through 90 degrees to allow envelopes to be fed narrow edge first, as this is the only way to feed envelopes on the SLM - otherwise they are too narrow to be picked up by the transport rollers. It is rather USA biased in that it offers a special postal coding system to be printed and I would like to have seen a smaller font to be used for the return address (where used) and an extra addressee line. Printing can be in a choice of font or size according to the current Assign.Sys file. Registration is \$30 and one also gets an accessory version together with FontGDOS, Atari's cut down non-vector font version of FSMGDOS for use with 520's.

Also available is a German program which allows the printing of HPGL files through a supplied configurable screen dump program. This seems to work quite well with the supplied demo file, although I haven't yet investigated just how one is to get a CAD program to write to a disk file rather than to a plotter. Both these programs have been submitted to the ST Club for inclusion in the catalogue.

Conclusions

The SLM 605 is immediately compatible with a wide variety of serious software, with most of them having a driver specifically for this laser (just choose the SLM804, it works just as well on the '605). You

can expect very high quality output with no trace of streaking in large areas of black and excellent grey-scale reproduction, and that produced quite quickly after clicking on "print" (GDOS output is slower, of course). Warm up time until the ready lamp lights is around ninety seconds or so, and once the brief initialization phase is over the printer is commendably quiet.

Toner is readily available from most computer supplies stores and at a lower cost than that charged by Atari, and in different colours. The practicalities of colour separation printing however is that a developer unit would be needed for each colour, and I understand that yellow toner is not available, which means that the widely used CMYK system would not be suitable. As expected it is also possible to obtain drum units from the same source, but be very sure that you can get the drum counter module. I have been told that it is possible to modify this module by cutting some PCB tracks and installing a wire link to disable the 10005 maximum number of copies feature, but this is only to be attempted if you are confident of your abilities and don't mind losing the warranty. At the time of writing I have no further information on this.

Against these points must be set the memory requirement of at least 2 megs for the host computer and the need to have at least the controller powered up in order to be able to use the disk drive system. The printer is also expensive when compared to the cheap lasers that are now appearing on the market, but beware. As mentioned earlier it may not be possible to make use of some of their features owing to the lack of suitable drivers for the ST, and you may need to purchase extra memory in order to be able to print a page containing any graphics without having an incompletely printed page. Such memory is not particularly cheap.

So speak to Mike Alderton at Cambridge Business Software, tell him that ST Applications sent you, and you can have one of these excellent lasers for £775 including VAT and carriage, which is probably the keenest price that you will find anywhere.

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A Laser Legend - The HP LaserJet IIIP

Andrew Wright looks at the latest version of the HP LaserJet, the IIIP, that is setting new standards in both print quality and price.

The greatest accolade a printer can receive is that others start to emulate it. The recent rash of LaserJet III compatibles appearing on the market are testimony to Hewlett-Packard's own success with the LaserJet III range, including, for ST owners in particular, the budget priced IIIP model.

Although the list price of the IIIP is well over £1000, HP's own heavy discounting policies ensure that it can be picked up quite easily for under £700 through mail order specialists. At that price it is quite a bargain - especially as it can easily be expanded into a PostScript device with the addition of a cartridge and extra memory. On the down side, however, many of the features that make it so attractive to PC owners running Windows are simply not available to ST users. In particular, this includes the scalable Compugraphic typefaces, Univers and CG Times, which can't yet be accessed by the majority of ST software packages.

Setting up

The LaserJet IIIP is very compact and easy to set up. It measures under 14 inches wide and 16 inches deep with a maximum height of 8 inches. Only the power lead and serial/parallel cables require access to the rear - replacement cartridges and paper are added from the front. Output is fed on to the top surface of the printer (or redirected into the front output tray by a hardware switch) and the on-off switch is on the side near the rear.

Setting up the printer is straightforward - the front folds down to form the input paper tray capable of holding up to 70 sheets of A4 paper. Another panel inside this one can be opened to reveal space for the toner cartridge which slides in and clicks into posi-

tion. The print density slide is also accessed from inside this inner compartment.

Documentation is very good, with a brief, instructive booklet on getting started and a comprehensive spiral-bound manual running to over 200 pages, by my calculation. The manual and booklet are full of diagrams and illustrations and there is also plenty of information for the technically minded developer and tinkerer in terms of control codes and HPGL/2 commands.

The printer connects to the ST via a standard Centronics cable. (Serial connection is possible but I haven't tried it for the obvious reason that it makes it slower and more difficult to use.) A parallel port buffer/line driver might be required depending on your ST's sound chip - both my STs seem to work fine.

Most parameters can be set using the six buttons on the front control panel, including paper size and orientation, fonts, number of copies and various settings for margins and lines per page. I've always used the default settings, finding them perfectly adequate and preferring to vary the parameters through software if at all possible. I think most ST owners would feel the same, but for the more knowledgeable minority there is plenty to play with. Custom printer drivers are also possible as the Escape codes are all well documented.

One of the first things to be done when the printer is set up is to print out the self test page once on each of the three RET settings. The print density can then be adjusted if necessary and the optimum RET setting selected as default. The test page also generates a second sheet which, believe it or not, can be used to clean the printer by running it through the printer again to clean the paper path.

In action

Print quality is remarkable. I've compared the output from an Atari Laser SLM804, an Apple Laserwriter and a LaserJet IIIP side by side. The HP's output leaves the others' standing when the RET function is on and is easily comparable when it is left off. This is hardly surprising as the Canon engine in the Laserwriter is the same as that inside the IIIP.

Entry level ST word processors such as First Word Plus produce text in the crisp, business-like Courier typeface that is the hallmark of today's lasers. Protex is supplied with a dedicated LaserJet III driver which can access some of the other typefaces in certain sizes, though they are not scalable. Unfortunately, to my knowledge, no other ST software can claim to have a dedicated driver for the IIIP.

That's Write will eventually support the IIIP's scalable fonts, according to Compo, but when that will be is anyone's guess. However, the latest version, That's Write 2, does support the delta row compression routines used to increase data transfer speeds when printing, as it does for the HP DeskJet 500.

DTP programs all drive the LaserJet quite adequately although there are considerable differences in output speed between the various packages. Calamus 1.09n and SL are both very fast using the LaserJet Plus driver. Didot Professional is a little slower and Timeworks 1/2 and PageStream slower still. GDOS programs work well using the Time-works LaserJet driver but the high apparent resolution caused by the RET (see panel) does tend to emphasise the poor quality of some PD fonts.

The main problem with DTP programs is that the available memory in the base LaserJet IIIP, around 720K, is insufficient to hold a full page. That's fine if you only want the top two thirds of the page, otherwise the only answer is to spend another £75 or so on a 1Mb upgrade. This is a simple DIY job (at least, it is if you use the official Hewlett Packard upgrade) with full instructions in the manual.

The IIIP is let down a little by its paper handling, as it tends to "crinkle" the paper somewhat with the heat used in the fusion process. This is improved to some extent by choosing the front output tray option, ensuring that the paper path is less tortuous. Paper thicknesses between 60gm² and 105gm² are recommended although I successfully got away with 130gm² paper on one occasion. The paper jam on the second sheet, however, persuaded me that it wasn't worth the effort. Labels need to be specially developed laser labels otherwise the adhesive will melt. Envelopes and overhead transparencies work fine.

On the whole, the LaserJet IIIP is an excellent machine, one which is setting the standards that others have to follow. It is no cheaper or more expensive than any other laser printer to run but it does offer some benefits in terms of increased throughput, especially over the original LaserJet models. For me, the resolution enhancement technology offers such a dramatic improvement in quality that bromides are required far less often for small to medium sized publishing jobs. The fact that there are compatible drivers with virtually all ST software makes it a sound buy for anyone thinking of upgrading from a dot matrix or an inkjet.

File Swap Text Block Move Line Sundry Print Spell **Style** Option Help

View Codes				F4
CG Univers	10 pt	✓	AXH	
CG Times	10 pt		AXR	
CG Univers	12 pt		AXXAXH	
CG Times	12 pt		AXXAXR	
Courier	12 pt		AXN	
Courier	10 pt		AXE	
Line Printer			AXM ^{AXC}	
14.4 pt Univ	Bd		AXZ	
12 pt Univ	Bd		AXY	
Quality Tray			AXD	
Landscape			AXA	
Bold			aB	
Condensed			AXC	
Italics			aI	
Subscript			AXS	
Superscript			AXT	
Underline			aU	

Characters:	C	U	E	A	A	A	A	C	E	E	E	I	I	A	A
	E	E	R	O	O	O	U	U	U	O	U	E	F	O	B

△ The HP LaserJet print options in Protex.

Resolution Enhancement Technology

The 300 dot-per-inch resolution of most lasers offers a substantial improvement in print quality over the comparatively modest resolution of dot matrix and other impact printers. Upgrade to a laser, however, and you soon start to notice the same staircase effect on curves and lines that are not horizontal or vertical - the dreaded "jaggies" or "aliasing" as it is more properly termed.

It's not as obvious on a laser, of course, but it is noticeable, especially when using text at large point sizes or angled lines. One answer is to develop lasers with higher and higher resolution - 400 and 600 dpi models are now widely available and even 1,000 dpi is possible in specialist products.

Hewlett-Packard's answer is Resolution Enhancement Technology or RET, which improves the smoothness of edges by intelligently adjusting dot size and position in relation to neighbouring dots. The same technology has been emulated in recent product launches, noticeably by Canon and Ricoh.

Dot position is adjusted horizontally by controlling the on-off timing of the laser beam, a process which smooths nearly vertical lines. Dot size is controlled by varying the beam intensity which creates much sharper points and line intersections. By using these smaller dots, the effect is similar to using a very high resolution laser. In fact, using RET, dots as small as 20 per cent of normal size can be placed at the edge of characters and graphics. This increases effective resolution in critical areas such as the serifs on characters and the points where two lines intersect to something approaching 600 dpi and up to 1,500 dpi in certain circumstances.

The RET feature on the IIIP can be turned off if required or it can be set to light, medium or dark, depending on the characteristics of the individual printer (apparently they are not all the same!). The manual describes this method of fine-tuning the output in considerable detail.

There are no speed penalties using RET as the whole process is hardware controlled but it does take up memory. The RET system stores a six dot high by 2,560 dot wide row of information at any one time. It then looks at each dot in relation to its 49 closest neighbours, using pattern recognition to decide on placement of the smaller dots.

For the technologists out there, RET is implemented through the use of an application specific integrated circuit (ASIC) which intercepts the video signal and adjusts the timing and power of the laser beam using pulse width modulation. For those of you who, like me, are turned off by this type of thing, let's just say that the print quality is excellent.

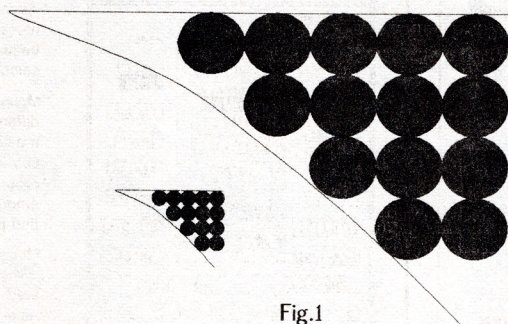


Fig.1

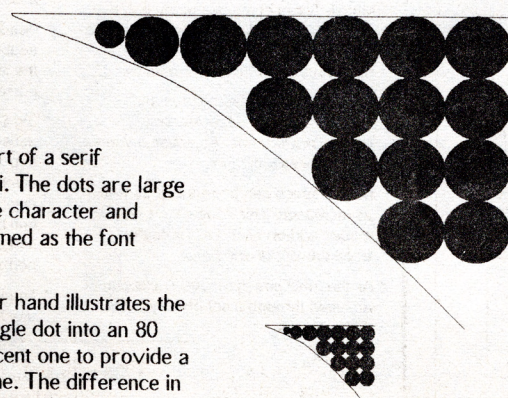


Fig.2

Figure 1 (above) shows part of a serif character printed at 300dpi. The dots are large relative to the outline of the character and prevent the serif being formed as the font designer intended.

Figure 2 (right) on the other hand illustrates the RET in action, splitting a single dot into an 80 per cent one and a 20 per cent one to provide a crisp, clean character outline. The difference in overall print quality is dramatic.

Conclusion

For:

- ✓ Good value for money - especially at discounted prices.
- ✓ Small and compact - ideal for the desktop.
- ✓ Up to four pages per minute output and fast data transfer from the ST.
- ✓ Compatible with earlier LaserJet models - most LaserJet II and Plus drivers work well.
- ✓ Easy to replace toner cartridge - no mess at all.
- ✓ Room for expansion with HP's PostScript cartridge, extra paper bins and even an Appletalk interface kit for Spectre GCR/Megatalk board owners.
- ✓ Resolution Enhancement Technology increases print quality dramatically.
- ✓ Wide range of paper input possibilities - transparencies, labels, envelopes (4 sizes) and single sheets of A4, letter, legal or executive sized paper.

Against:

- ✗ Basic 1 Mb RAM needs upgrading to 2Mb if graphics and DTP are being considered.
- ✗ Tight paper path and apparently high running temperature can cause paper to crinkle slightly.
- ✗ Only Courier (and Line Printer) fonts can be accessed on the ST. PC owners can use the Windows driver to access scalable Univers and CG Times typefaces.

Performances Compared

	IIIP	LP1200	SLM804/605	
			8MHz	16MHz
PageStream	338	288	64	43
Calamus	130	91	64	47
Redacteur 3	98	60	78	71

Notes

- * All times are in seconds.
- * With an ST fitted with Turbo 20/25 the Atari laser prints roughly twice as fast with PageStream and 50% faster with Calamus.
- * With FPPRINT installed the 288 second time for PageStream is reduced to 108 seconds. This patch does not speed up the Atari Laser.
- * Atari Laser (SLM 804/605) times were calculated using a Mega 4 with the AdSpeed accelerator fitted. The 16MHz times quoted should be much the same for printing from a Mega STE.
- * Although the SLM605 is nominally slower than the SLM804 this does not affect the time taken by the ST to calculate the page; so there is virtually no difference between the speeds of these two printers when printing single copies of documents.
- * PageStream does a fair amount of loading from disk while calculating the page: a fast hard drive will speed up print times noticeably.
- * PageStream test pages were not the same so these results should not be used to compare these two packages. The Redacteur test document was a 5-page text file. On the Atari Laser this was printed via the Diablo emulator; the same five pages could be printed in under 2 minutes when using the Redacteur graphics mode.

Multiprint

Multiprint is an intelligent printer buffer that records data sent to your printer via the parallel port or serial port. Multiprint is controlled by an intuitive dialog box with VCR style buttons. Features include:

Replay of recorded data for high speed multi-copy printing of letterheads or leaflets.

Saving of data to printer file (*.PRN or compressed *.PCN) and loading of buffer with previously created printer file - for quick'n'easy reprinting at a later date. No need to rerun your DTP or art program.

Option for compressed buffer and printer files for minimum demands on memory and disk space. Average 300 dpi DTP data compressed to 40% of its original size.

Load and print printer files produced by other programs - and compress them to Multiprint's own PCN format for better use of disk space.

Background printing with "Priority Delay" allows you to share a chosen percentage of your computer's time with Multiprint.

£9.95

The ST Club

2 Broadway
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NG1 1PS
Phone (0602) 410241

*Comprehensive
printed manual*

Imagecopy

Copy images from screen and save them in IMG, Degas or RSC format. Images may be copied by pressing Alternate-Help, allowing you to capture images when the Accessory menu is not available.

Flexible rubber-banding system which allows images to be selected with a fine degree of accuracy.

Copies images from both standard and large screens (including virtual large screens such as MonSter) in any of the normal ST/TT resolutions except TT low resolution.

Convert images to different formats. Imagecopy reads images in IMG, Degas, NEOchrome, Art Director, and Tiny format, and writes images in IMG or Degas format.

View images on a monochrome or colour monitor (colour images are dithered on monochrome screens). Up to four images may be displayed simultaneously.

Imagecopy is supplied as a desk accessory and as a stand-alone program. A fully illustrated manual is included.

Imagecopy	
Information	I
Alt-help keys	A
Image format	F
Image colours	L
Printer type	T
Print options	O
~~~~~	
Copy image	C
Convert image	X
Save image	S
~~~~~	
View image	V
Print image	P
Print screen	D

Print images and screen dumps in a variety of resolutions on a range of different printers, including: 9-pin or 24-pin Epson-compatible dot-matrix printers, Bubblejet printers, and Deskjet and Laserjet printers. Print speed is much faster than normal GDOS output.

*Coming soon:
Imagecopy Colour*

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WARP 9

The software accelerator

Boot up with Warp 9, and you'll never want to be without it again. Warp 9 increases the speed of screen output dramatically - windows snap open, graphics appear instantly, and text *flies* onto the screen.

How is this possible? Most GEM programs display graphics and text by calling standard routines built in to TOS. Warp 9 intercepts and handles these calls with optimized assembly language code that is *much* faster than the built in routines. Graphics and text still look the same, but appear with astonishing speed!

Warp 9 also includes a unique configurable mouse accelerator, desktop pictures, custom screen fonts and fills (72 screen fonts are supplied), and function key control of alert boxes with the F1, F2 and F3 keys. The Warp 9 Customizer lets you create your own fonts and fill patterns. And best of all, Warp 9 is compatible with all the programs you run.

Launch Price: £24.95
Upgrade from Quick ST3: £12.95
Upgrade from Turbo ST: £14.95
Upgrade from NVDI: £14.95

From 28th July 1992 we are the UK distributors for WARP 9
The ST Club, 2 Broadway
Nottingham, NG1 1PS
(0602) 410241

Return master disk for upgrades from Quick ST3
Send manual front page for upgrades from Turbo ST or NVDI.

£24.95

Mouse Tricks 2

* As many as 20 different settings can be named and saved, and each mode can be selected via a dialog or a user selected keycode.

* Mouse Tricks keeps a list of up to 40 different programs; for each program on the list you can specify both the mode you wish to be installed when a program is run, and the maximum amount of memory initially available to that program.

* Mouse Tricks contains a text reading utility, Read Text, with which you can load, read and switch between as many as eight text files from within any program that allows access to desk accessories.

* Read Text can also be invoked by double-clicking on the desktop icon of the file you want to read, or by pressing a user defined keycode.

* Big STE is a virtual screen utility that uses the STE's video display hardware to provide instantaneous smooth scrolling around virtual large screens of any (feasible) dimensions, with the option of an interlaced display for any screens with double (or greater) the normal screen height.

* Tutorial function to help you learn to use Mouse Tricks.

* Mouse Tricks combines many of the functions of existing mouse utilities in a single desk accessory and adds numerous extra functions of its own.

* Mouse Tricks can set up suitable modes of mouse behaviour for particular programs. An optional screen saver is also included.

* Mouse speed can be reduced as well as increased. This allows a cross-hair mouse add-on such as "Tracey" to trace artwork of any size.

* All the functions of Mouse Tricks can be adjusted through a set of easy to follow dialog boxes.

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£9.95**

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page ring-bound
manual supplied.*

Word-EX v2.01

Word-EX or Word-Extractor v2.01 by Paul Hargreaves is the new commercial release of the popular shareware program Word-Extractor, currently at version 1.60.

So what does it do? Well, most of us have probably been in the situation of tearing our hair out on the last answer to the crossword puzzle that is an eleven letter word with a 'p' as the second letter, a 't' at letter eight and ending in 'n'. (I present no prizes!). Or how about the one that is an anagram of Mr Lonely goin'? And don't you just hate those 'how many words can you find in...' type puzzles? Well, Word-EX is just for you - word puzzle players who are either lazy, not very good - or both!

Word-EX comes on four bright red disks consisting of the main program and eight different word lists of various lengths and quality, three of which make up a complete dictionary of 226,557 words! Smaller lists enable you to use Word-EX in various configurations depending on available memory and time, the best single file being 70,765 words long. There is even a word list derived from the Old Testament.

The word lists come in DODGY format which is a home-grown compression technique based on the differences between two words - the smaller the difference the better the compression. Although Word-EX can use ASCII word files, DODGY42 is included in the package which is the word list compression utility to make your

own DODGY word lists for Word-EX. This is quick and efficient, working without fuss. The program allows for the selection of any word list and even wild cards, so that more than one word list can be used from the disk. A utility is provided to enable the joining together of smaller word lists into one big file, disk space allowing.

Users of the older versions will instantly be pleased, as I was, on running Word-EX v2.01. It has a simple, easy to use GEM interface compatible with OverScan and other large screen formats. All the options, including choosing the name of the word list, are all mouse operated and intuitive: the only time you need to touch the keyboard is to type in the words you want Word-EX to operate on. Up to twenty words can be entered and worked upon at the same time and the maximum word length is 400 characters!

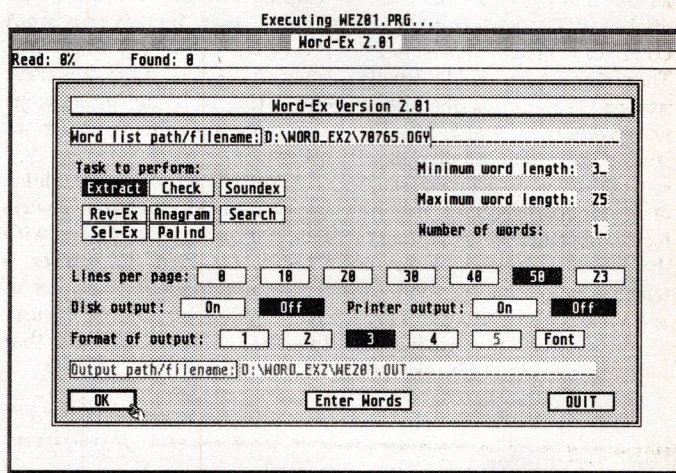
Word-EX has many configuration options which can be saved to a configuration file and so become the defaults when you next load it up. The range of functions is impressive and this is where Word-EX shines when compared to similar abilities of some word processors, such as Protext.

The Tasks

The **Extract** function is for solving word puzzles where you are asked to find as many words as you can from within a long single one. Here you can decide on the minimum and maximum word lengths that Word-EX will find.

The Word Puzzlers' Companion

In an ST Applications exclusive, Mark Baines tries out a new update of a popular program.



△ Clear, easy-to-use Main Screen with output screen behind.

Reverse Extraction is a novelty. It searches for words in the word list that contain your word, i.e. it will find MARKET for the word MARK.

Selective Extraction is another interesting variation where you place a number at the beginning of your word which is the number of the letters from the front of the word that must be in the words that are to be extracted from the word list. ZORANGE would provide GORE but not NEAR.

Check is the function you

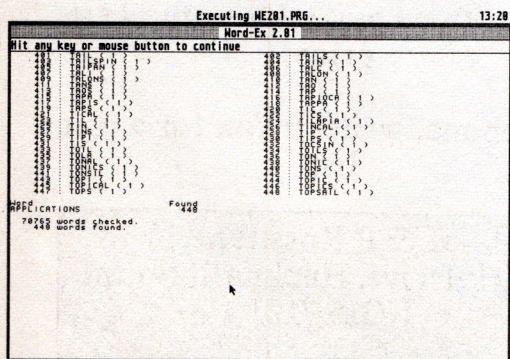
would use to solve crossword puzzle words with missing letters. If you enter a word containing a question mark for each missing letter, Word-EX will attempt to fill them in for you.

Anagram searches the word list for any words that are anagrams of the words entered. Apparently, so the docs say, one in seven words is an anagram of another. Did you know that?

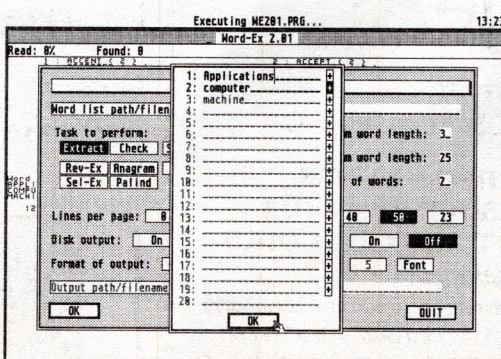
Palindrome is a new feature which enables you to search the current word list for palindromes, words that are the same backwards as forwards, such as ROTATOR. I was surprised how few words are palindromes.

Search looks through the word list for words containing your entered word, either whole or part. For instance, if you entered COMPUT, it will find COMPUTE, COMPUTER, COMPUTABLE, COMPUTATION, COMPUTERISE etc.

Soundex is a system that was developed to find words that sound similar to each other. TURBO, TURBAN and TURBID all have the same Soundex code. Word-EX supplies two versions of



△ The Output Screen, showing some of the words to be found within "Applications".



△ Entering words for processing. Word 1 is "Applications" whilst word 2 is a combination of "Computer" and "Machine" (note the highlighted plus sign).

this system: one is the strict implementation and the other is Paul's own 'lazy' version.

Output

Output is normally to the screen, where the number of lines shown between waiting for a key press can be configured from zero to fifty in groups of ten. Zero means a continuously scrolling display, useful when outputting to a disk file. An extra button is configurable to a number of your choice. In my OverScan mode I have it set to 23. There is also a choice of the normal system font or a smaller one that allows a two-column display of 100 words to a page in OverScan mode. Very neat! There is the option of additionally sending the output to the printer or separately to a disk file. The style of the output can take one of several formats, including single or double columns and a plain list format, useful when outputting to the disk and creating a list of words that could be used for another purpose. Output to a Protext file and a file that can be read back in by Word-EX are also

available.

The operation of the routines is generally slower compared to similar routines in a program such as Protext which has larger dictionaries. Some functions, such as Soundex, are notoriously slow because of the added operations on the word list. I'm sure that Paul Hargreaves gave great consideration to the speed of operation, but on an 8MHz ST some people could get very impatient waiting for the results. However, if you are using Word-EX to enter competitions and money is at stake you won't mind sacrificing speed for thoroughness and Word-EX certainly is that, for whereas word processors would only have Anagram and Check type functions, Word-EX offers far more scope and is considerably cheaper, of course.

Word-EX is a welcome addition on my hard disk drive and I always look forward to upgrades with interest, for Paul Hargreaves is continually improving aspects of the program in response to user feed-back. Now, where's that Radio Times...?

Conclusion

Points for:

- ✓ Extensive facilities
- ✓ Very cheap
- ✓ Very easy to use
- ✓ Fully configurable
- ✓ Works with all STs/TTs regardless of TOS, disks and memory.
- ✓ Continually updated and supported.

Points against:

- ✗ Slow at times
- ✗ Some on-line help required and better documentation.

Alternatives:

Some commercial word processors, such as Protext which do not cover the same amount of functions or have the convenience. Word-extractor v1.60 still shareware and available from PD libraries.

Word-EX offers extensive facilities to word puzzle gamers. Paul Hargreaves has vastly improved the interface of this program where even young children can use it without difficulty. Its competitive price and this ease of use make it a must for all word game cheats!

Product:..... Word-EX v2.01

Programmer:..... Paul Hargreaves

10 The Ride, Brentford, Middlesex TW8 9LA

Distribution:..... Paul Hargreaves or Goodman Enterprises

16 Conrad Close, Meir Hay Estate, Longton, Stoke-on-Trent ST3 1SW

Telephone: 0782 335650.

Price:..... £10 (introductory price until 31st October 1992)

Manifest:..... 1 program disk and 3 dictionary disks; documentation as a disk file.

System:..... All STs/TTs regardless of TOS, disks and memory. Compatible with OverScan.

Users' Guide to First Word

This ring-bound guide to the precursor of First Word Plus is aimed at introducing the basics of word processing in the GEM environment, and at building up the user's confidence with more advanced features.

Included are:

- * Cut/paste block operations
- * Rulers and style menus
- * Printer drivers
- * Various additional utilities such as Ramdisks

The First Word Guide costs £6.95 from the ST Club.



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Gotta Pick a Pixel or Two

The new kid on the block seems like a grabbing sort of character, forever sneaking a look at, copying and saving things. But as Peter Crush has discovered, far from being an unpleasant individual, Jeremy Hughes' latest baby is a clever young fella, although much given to pinching your pictures.

One of the first Desk Accessories I ever came across when I got my ST was Snapshot, a Public Domain utility which enables you to take a "grab" of whatever is displayed on the monitor screen and save it to disk as a picture file. To actually look at the resulting picture, it was necessary to load the file into an Art program such as Degas. At the time, this seemed like a useful and interesting thing to be able to do, and there was certainly nothing like it on my previous computer! If you look through the PD catalogues you will see loads of similar DAs and programs which do more or less the same thing, with a variety of features and approaches. With such a profusion of snapshot utilities one might be forgiven for thinking the market was saturated, but there is now a brand new commercial utility with capabilities that go way beyond the features offered by PD programs, and it goes by the clever name of Imagecopy. This program deals very comprehensively with ST screen images, and, written by programmer Jeremy Hughes (responsible for the famous Fontkit series of software) is nothing if not thorough. If you want to "grab" images from your screen and save them to disk, load and display images from disk to screen, convert images from one file format into another, or print out images to your printer, Imagecopy will do all these things from just one compact DA slot!

Art thief

Imagecopy combines all these useful features into a Desk Accessory, and supplied on disk is an alternative version for use as a stand alone program. Like any DA, you have to place Imagecopy onto your Boot Disk, and it will then

be accessible from the ST's Desk Menu. Imagecopy will work from inside almost any ST programs, even non-GEM ones, and is called up by simply pressing the ALT-HELP keys together. However, in common with all other screen-grabbing programs, Imagecopy will not let you take screenshots from most Games software, which have coding that overrides such interception. (The Games screenshots you see in the glossy magazines are usually obtained by expensive hardware devices, but Power Computing's "Ultimate Cartridge" can also do this trick.) Whilst most snapshot utilities enable you to copy the whole screen only, with Imagecopy you can have either the whole of your screen grabbed, or rubber-band just the part you require. And you can fine adjust the size and position of the section of screen you want before it is saved using either the mouse or the cursor keys, giving very precise results.

Altered images

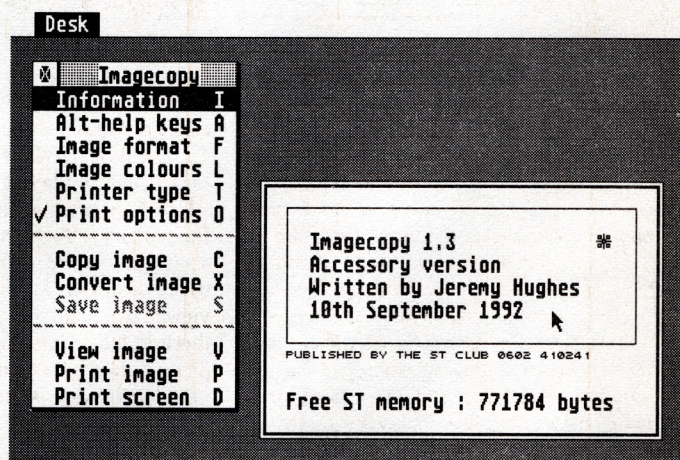
You can save the grabs in either of the DEGAS formats (normal and compressed), or as .IMG files, but you may load and display not only these formats but also TINY, NEOCHROME and ART DIRECTOR, and Jeremy is considering adding other file formats to Imagecopy's armoury. The program runs in all screen resolutions, and works with any monitor, including real large screens or virtual large screens! Of interest to the more technically minded will be another feature which lets you save an image as a .RSC resource file, handy for programmers or for importing stuff into Fontkit for editing. If you have a picture in one file format and want to change it into another, Imagecopy will do it for you, e.g. TINY to Degas, or NEOCHROME to .IMG. There are

many programs that offer this feature i.e. PicSwitch which handles even more formats, but to have this facility built into a DA is most useful. Up to four images can be on screen at once, and these are displayed in the standard GEM windows which are all movable,

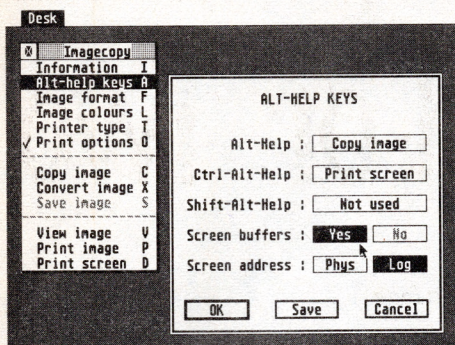
scrollable and re-sizable in the usual manner. If you are using a mono monitor and need to look at a colour picture, no problem, Imagecopy will dither the image and display it for you in black and white.

Picture Show

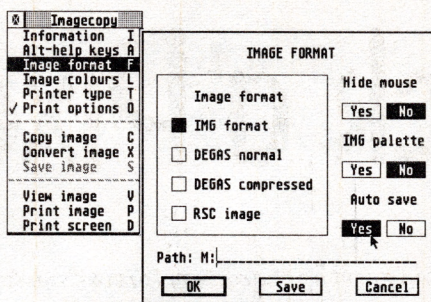
The easiest way to illustrate some of Imagecopy's many features is to take a walk through the program and show how it can be set up to suit your particular requirements. All the screen-grabs were produced using Imagecopy.



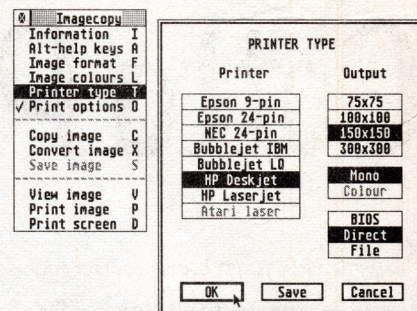
1) Once Imagecopy has been put onto your ST's Boot disk, when you reboot the computer Imagecopy will appear in the Desk Menu. You can pull down this main menu from which all fine tuning is done via well designed dialogue boxes, most adjustments take immediate effect and will override the default settings which have been previously saved. When Imagecopy's menu is on-screen, the keyboard shortcuts shown in brackets on each line allow you to institute the desired action by simply pressing that key. The first option (Information) displays the usual program version number and is also a useful way of finding out exactly how much ST free memory you have available. If Jeremy wants to further embroider Imagecopy, perhaps the TOS version could be shown!



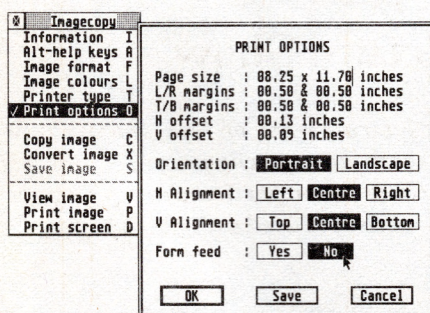
2) The next item on Imagecopy's menu enables you to set up the key combinations you want to use to take your snapshots. Imagecopy politely refers to taking a grab as "copying" an image, and the default keyboard short-cut for Copy Image is to press the Alternate and Help keys together. Using Alt-Help means that you can take a grab without Imagecopy's main menu having to be called. The image on screen can be output direct to your printer by using the Control-Alternate-Help keys. Screen Buffers can be set On to reserve extra memory, enough to store two ST screen-size buffers. This is useful as some programs will not let you take a grab because they hog all available RAM when run. If you have enough memory, leave this option on!



3) The Image format of your grabs is established on this sub-menu. IMG is the default: this will store your pictures in the most economical way as this file format takes much less disk space than Degas. The file format to use will depend on what programs you will be importing the images into. It would be handy if a few more formats were available to cope with Mac or PC file formats. I have set my Hide Mouse to No, as for most magazine uses it's preferable to see the mouse pointer on the screen, but you can turn it off if you want a mouse-less snapshot. A default path can be set for Saving files into; using Drive M: as shown I save mine into a RAM disk (Maxi-disk) for viewing and renaming prior to permanently saving them to a real disk.



4) The Printer Type options enable you to print out your images to virtually any kind of printer, and to select the one you want just highlight its name. Imagecopy can print out to 9- and 24-pin Epson compatible printers, Canon and clone Bubblejet printers, HP DeskJets, and LaserJets. Printing is quite fast, and is mercifully accomplished without any use of GDOS! Other printer drivers will no doubt be added - Colour Deskjet and Atari Laser would be nice. The size of the printed picture is determined by which Output box is set: the larger the number the smaller the resulting print - e.g. a 300 x 300 Output gives a small picture, whereas a 75 x 75 Output will fill an A4 page!



5) The Printer Type options should be adjusted in conjunction with the Print Options. Using this dialogue box you can decide your paper size, orientation (Landscape or Portrait) and margins and offsets. I have set Form Feed to "No", which enables the printing of either 4 or 6 small "thumbnail" pictures on the same page, else the printer will produce its image and feed out the page after each picture. As with all the other dialogue boxes, you can Save the settings to make them the defaults, but if you want to alter them temporarily within a session just click on OK. Imagecopy is a fast and easy way to print out images, and the results look very good on all the printers tried, especially inkjets and lasers.



6) Viewing images is a simple matter: clicking on this option (or pressing "V") presents you with the Atari (or replacement) file selector and you can choose any *.IMG, *.PI?, *.PC?, *.TN?, *.ART, or *.NEO file. This will be loaded and displayed within a standard GEM window which is re-sizable and movable in the usual manner. Images larger than screen size are viewed by using the scroll bars to move around, and pressing ESC toggles the window borders on and off. Up to four windows can be viewed simultaneously, and pressing the TAB key cycles through them, bringing one to the top. The name of the picture being viewed appears in the top scroll bar, and if you double click on the image an information box gives you its vital statistics.

Summary

Points For:

- ✓ Stable, well-programmed utility
- ✓ Many features in just one DA
- ✓ Modest asking price

Points Against

- ✗ Nothing worth grumbling about

Conclusion

There's no doubt about it, if you are involved in any serious writing or DTP work on your ST, Imagecopy is a program that you shouldn't do without. It's a magazine contributor's dream, you can take and call up those screengrabs at any time to check that your captions make sense, and it works with virtually anything you throw at it. Imagecopy has a permanent place in my DA slot. As Imagecopy does everything it was designed to do, it's not really possible to fault it. On that basis, any suggestions for further enhancements are not really fair, as they would attempt to turn the program into something it was never intended to be. But here goes anyway! For example, it would be nice if elementary drawing or bit image editing features were included, enabling images to be both grabbed then adjusted. And maybe the ability to "lasso" an irregularly shaped portion of the screen would be nice. And how about adding a few dozen more image formats... one could go on and on! But to sum up, Imagecopy is yet another winner from Jeremy Hughes!

Product:.....Imagecopy

Version:.....1.3

Price:.....£9.95

Supplier:.....The ST Club

Telephone:.....0602 410241

Manifest:.....20-page A5 Manual and d/s disk

System:.....All STs, STEs and TTs

The Compleat Swiss ...

Albanian Afrikaans
Amharic Armenian
Arabic Assamese
Azeri Bihari Byelo-
russian Chinese Chuang
Czech Danish
Dzong-
kha

English Esper-
anto Estonian Farsi
Finnish French Ger-
man Georgian Greek Gujarati
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Punjabi Pushto Rajasthani
Russian Sanskrit Serbian
Serbo-Croat Sindhi Slovene
Slovak Spanish Swedish Tajik
Tamil Tibetan Tigrinia
Turkmen Uighur Ukranian
Urdu Uzbek Vedic and more

EFF Swiss 1 £19-95 Standard
Oblique Bold Bold Oblique EFF
Swiss 2 £19-95 Light *Light*
Oblique Black Black Oblique
EFF Swiss Condensed 1 £19-95
Condensed *Condensed Oblique*
Condensed Bold Condensed Bold
Oblique EFF Swiss Condensed 2
£19-95 Condensed *Light Condensed Light*
Oblique Condensed Black Condensed
Black Oblique EFF Swiss Inserrat
£9-95 **Inserrat Inserrat Oblique** EFF
Swiss Narrow £19-95 *Narrow Narrow*
Oblique Narrow Bold Narrow Bold
Oblique EFF New Swiss £29-95
Standard *Italic Light Light Italic*
Ultra Ultra Italic

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... And More

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Shoestring Software

Educational software has been one of the biggest growth areas in computing over the past two or three years. Computers are an ideal learning medium, especially for young children, but they are seldom exploited to their full potential in this field. Shoestring Software have released nine educational titles in little over a year. Steve Delaney asked proprietor Ian Blair for some background on his company and their range of products.

The idea behind Shoestring Software was formed over Christmas 1990 and their first six titles were released in the second half of 1991. Because a game can take up to eighteen months to develop and entails high promotional costs, Ian decided instead to develop educational software.

The initial idea was to produce budget priced educational software for the ST and Amiga at £4.99. At the time, most educational software was costing around £20 and Ian felt that customers would be happier to pay £4.99, especially since most software will only hold the child's interest for 3 months or less. Robot Attack was his first release but he found himself spending as much money promoting it as he was making in sales revenue. He also found that distributing it himself left very little time to develop new titles. With this in mind, he decided to give licenceware a try. The Shoestring licenceware scheme runs identically to that of Budgie UK, with titles costing £2.95 each and 50p going to the author for each copy sold.

All games are mouse-controlled for ease of use. Documentation is provided both as an ASCII file on disk and an instruction manual on screen which can be called up from the loader program. Instructions are brief and to the point but adequate to get you started.

Eighteen months on, Ian feels that Shoestring Software has developed in much the way he had intended. Being a new range, the initial problem has been convincing the public that despite the low price, Shoestring titles are worth buying. Royal-

ties are a little thin on the ground at present but this is expected to improve with greater product awareness. At present, Shoestring is just a hobby as Ian is studying for an HND in computers. However, he hopes that by the end of his course it will have become a commercially viable business venture.

Although most of the titles released were written by Ian himself, he is always willing to look at educational software from other sources for distribution under the Shoestring banner. This is demonstrated by the recent inclusion of Word Race and Drop Down Words by Ian Holden. Future projects from Shoestring include 'O' level revision aids and a small range of utility software which runs under an environment not too dissimilar to Windows on the PC.

I've had numerous contacts with Ian Blair over the past year and he can only be described as a true ST enthusiast. The Shoestring range is easily recognisable as the same familiar characters feature throughout. I am assured that this is set to continue with future releases. This is a good thing as a child who enjoys one program will find a familiar character in another. All the titles reviewed here are well written, easy to use and will stimulate the learning process in the younger child. Authors of educational software wishing to distribute through Shoestring should send an evaluation copy to Ian Blair, Shoestring Software, 78 Carmarthen Road, Waun Wen, Swansea, SA1 1HS.

Terry Freedman offers an overview of the Shoestring range...

Shoestring have made something of a name for themselves with inexpensive software - hence the name - which combines an element of fun with an educational purpose. It's a software house which has fully embraced the concept of Licenceware - software at a PD-type price which brings a royalty payment to the author.

Shoestring has a certain trademark or, if you like, "house style" which is fairly distinctive. The disk loads itself, there are instructions on screen which you can scroll at the speed which suits you, the graphics/animations are often interesting and, in the word games, the word banks are usually editable. Finally, there is often a choice in terms of difficulty level, variations on a theme, or both.

The programs are not always educational in the sense of teaching anything (although many of them could be used as part of a teaching programme), and what they TEST is frequently unclear. This isn't the time and place for a lengthy discussion of the science of testing, but whenever you have a situation in which someone is being pitted against an opponent (in this case the computer), or constrained by a time limit, it's inevitable that it isn't only their knowledge that is being tried.

All of which applies equally, of course, to more traditional methods of testing: computer programs in general and Shoestring's software in particular is no better or worse in that respect. But perhaps the results obtained from using it should be taken with a liberal dose of salt?

Whatever you think the programs are testing, though, they are so inexpensive that even if they're only used a few times you will still have got your money's worth.

In this round-up of a selection of the programs available from Shoestring, I've summarised the advantages and disadvantages of all of them in one box. Individual plus and minus points have been noted where relevant.

Maths Programs

All Blocked Up

This is a mental arithmetic game. If you're old enough to remember the first space invader games, substitute arithmetical questions for the attack-

ing aliens and you'll have a rough idea of how this program works. By typing the correct answer you "zap" the question and score a point. Get the answer wrong and blocks appear, shortening the distance between you and the descending question.

There is a mind-boggling degree of choice of difficulty level, from level 1 to level 12. Levels 1 to 3 contain exercises with numbers up to 9. Levels 4 to 6 are concerned with numbers up to 20, 6 to 9 with numbers up to 50 and the last few go up to number 99. Only addition and subtraction are tested.

To make matters even more interesting, there is also a variable speed control.

However, the question that comes to mind in the midst of all this frenetic activity is: WHY? What is the aim of this software? It doesn't teach you maths, or even mental arithmetic. All it really does is test your mental agility in arithmetic under a particular set of circumstances. In fact, it bears the same relationship to arithmetical understanding as Mastermind does to education: irrelevant and probably misleading in terms of the impression it gives of what it's all about.

Having said that, kids do enjoy it (I've seen 'em), and it's a much more pleasant way of testing basic arithmetical skills than more traditional methods - at least, for a while.

Aye, there's the rub: long-term interest is likely to be low, because each game is the same as all the others. Nevertheless, the price is low enough to buy even if you end up using it just once a year as part of Christmas day games.

Maths Fun

This program tests basic skills like adding, subtracting, counting and matching. Surprisingly for Shoestring, the instructions are rather complicated, although that may be because the program itself affords a wide choice of activity.

First, you must choose the TYPE of game you want to play: High or Low and Number Match are matching exercises, while Simple Sums is concerned with addition and subtraction using numbers below 10. You may also choose whether the problems are presented in the form of numbers, pictures, or a mixture of

both.

The first one, **High or Low**, is really quite good: you're shown a collection of objects and then you're shown another set of different objects, and you have to decide whether the second set is bigger or smaller than the first. It's good, because the objects being compared are different. That means that it's testing the understanding of the idea of three-ness, or five-ness, etc., as an abstract principle which can be applied in different circumstances.

In **Number Match**, you have to match a number, such as "2", with a set of objects on the screen, out of a choice of three sets of objects. (You can do it the other way round too, i.e. match a set of objects with one of three numbers.) If you get it wrong, you're shown what the correct answer is by an arrow pointing at the correct answer, and then the question is repeated.

In **Simple Sums**, if you get the answer wrong you are not told the correct answer and the question is not repeated.

There is a certain degree of humour in the program, although very young children probably won't appreciate it: if a correct answer is given, the computer plays "For he's a jolly good fellow". An incorrect response elicits the *Funeral March*!

The score is shown in an interesting way at the end of the game, which consists of ten questions: each answer is represented as a robot coming off the production line and being inspected. Correct answers get the "OK", but incorrect answers are shown as the robot being rejected and "splatted". This is good graphics but, unfortunately, bears no relation whatsoever to the game itself, which probably makes it bad graphics. In fact, it is not the only animated sequence in the program which is somewhat long-winded and unnecessary, unless one regards such features as a positive incentive to do well at the game (most of the long animations occur when a correct response has been given).

Despite this criticism, it's worth buying this program. It tests what it sets out to test (there is no time limit or any other sort of pressure, so it isn't testing ability to withstand stress!), and does so in a fairly interesting way. There is enough variety to keep a child occupied for some considerable time. All in all, this is excellent value for money.

English Programs

Word Race

This is a variation on Hangman: you're presented with a word containing blank spaces where the letters should go. You guess what letters are in the word, and carry on like that until you've either won or lost.

However, unlike Hangman, in **THIS** game you don't get hanged. The game is that you are represented on the screen by an athlete, and the computer is shown as another athlete. Every time you guess a letter correctly your runner spurts forward, and every time you get it wrong the computer's player spurts forward. You continue in this way until you've won or lost up to 5 trophies. The words are divided into eight different categories: colours, school, trees, clothes, house, birds, food and animals.

On the face of it there is little to recommend this package: the game play is somewhat banal and, far worse, the word banks aren't editable. Nonetheless, the music and the graphics are good, and the game is easy enough to play without requiring an adult presence after the initial instruction. As for the lack of editable word banks, much commercial software doesn't include this facility; at least **Word Race** won't bankrupt you.

Despite its limitations, **Word Race** would be useful to have around, especially for children who find it easier to concentrate with a computer than with pencil and paper!

Drop Down Words

In **Drop Down Words** words drop down from the top of the screen, and the child has to type them in correctly at the keyboard. When that is achieved, the word suddenly develops a parachute (!) and it lands safely, as opposed to crashing down and exploding on impact.

This is similar to the kind of typing tutor in which you have to "zap" words as they hurtle towards you, although not quite so frenetic as that type of program usually is.

There are four levels of play, with the higher levels being not only faster, in terms of the speed with which the words fall, but also more difficult because the words disappear from view as they drop.

The program also features four word banks, so that you can have, in effect, a possible 16 different variations. Moreover, these word banks, which can accommodate up

to 64 words in each, are editable. That means that you can put in words which are linked by a common theme (either in terms of subject matter or letter groups). Alternatively, you could have different word banks for different children, or the same child at different ages.

This program shares the same faults as all programs of this type. For example, the "game play" bears no relation to the skills being tested. More importantly, perhaps, it doesn't really seem to know **WHAT** it's testing: is it testing spelling, keyboard dexterity, short-term recall - or all of them?

Another fault is that it can become a little repetitive.

Despite these criticisms, it has its positive sides: the graphics and animated sequences are good, it's extremely easy to use - you could, in fact, leave young children to their own devices once you'd explained to them what they had to do - and **YOU** can decide what words to have in the word banks. It's this last point which really swings the balance. Having the facility of editing the word banks means that you can update, change, make more challenging or make easier the game being presented to the child(ren). A pity that you can't import word lists from a word processor, but let's not get **TOO** greedy!

Moon Letters

This is a shoot-em up in which the "aliens" are letters. There are four word banks and six levels of difficulty, these being Practice, Easy, Medium, Hard, Expert and Genius.

The idea of the game is that a word is given to you and you then "shoot" the letters which make up the word as they appear on the screen. At the most basic level the word remains on the screen all the time. As the difficulty level is increased, you first of all have to remember what the word was, and further on you're shown letters which do NOT form part of the word; if you shoot them you're penalised. The game gets more and more frenetic as the time limit is reduced at "higher" levels of the game.

This program suffers from similar faults to others in the range, namely that it gets a bit boring after a while and that it tests a number of things besides what it says it's testing - such as how quickly you can move the mouse.

It has one feature which tips the balance in favour of buying it, and that is the ability to edit the word

lists using the editor program supplied. You can have 4 word banks with up to 68 words in each. Importantly, it enables you to test the words and word patterns that **YOU** think it's important to test, and to change these as necessary.

Robot Words

This program is - surprise, surprise - a hi-tec version of Hangman. This time, though, instead of being hanged you're "zapped" by a robot that has been built up as you've been selecting the wrong letters.

There are three difficulty levels and, as usual, four word banks to choose from. On Level 1 you must solve one word only. On Level 2 you must solve ten words, and you start with an unbuilt robot every time you start another word. Level 3 also contains ten words, but your partly built robot is carried over to each new word, which tends to put the pressure on somewhat.

In terms of game play there's not much to choose between this and **Drop Down Words** - they are different on a superficial level, but really they're exactly the same.

Points For:

- ✓ Many programs are editable
- ✓ Easy to use
- ✓ Interesting graphics
- ✓ Often several levels of difficulty
- ✓ Well-thought out
- ✓ Inexpensive

Points Against:

- ✗ Games get a bit boring after a while
- ✗ Programs don't always test what they purport to test

Conclusion

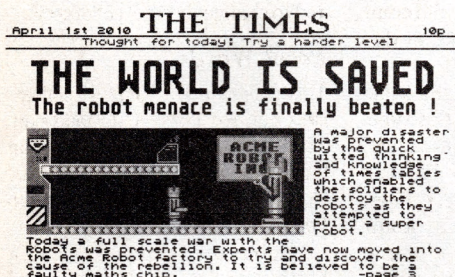
A problem until now is that some of the games have been very similar to each other in the way they work, as mentioned when looking at **Robot Words**. However, there are other programs in the range not reviewed here, such as **Alphabet Mix**, which are somewhat different in their approach. Also, there are a couple of developments in the pipeline which look quite interesting. I'm not sure whether **Shoestring** have a customer mailing list, but if they have it's worth getting on it.

As for the programs reviewed here, they definitely represent value for money. Used alongside other software or even - dare I mention it? - non-computerised materials such as books, they are a worthy resource to call upon in the course of a child's education.

The Shoestring Collection

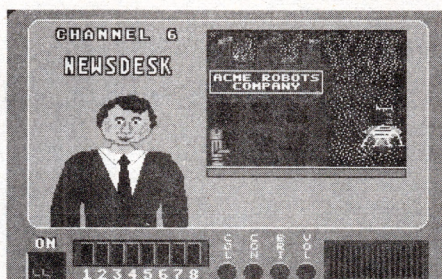
Steve Delaney takes a look at the full range of educational software available from Shoestring Software...

(These disks are available from the ST Club: see page 30 for details.)



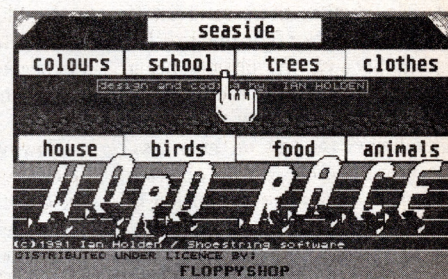
Robot Attack

Robot Attack is based on the old Hangman game but uses multiplication tables instead of words and is suitable for about 7 to 10 year olds. Small robots are dropped from above and will land on one of four platforms. When the robot reaches the crate at the end of the platform, part of a giant robot is put in place. The child must type in the correct answer to the given sum before the robot reaches the crate.



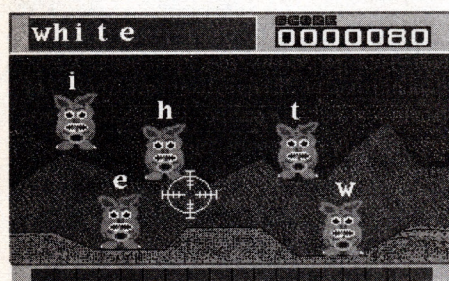
Robot Words 1

This is the follow up to Robot Attack and is another Hangman clone. You are presented with a choice of three levels and can choose from 4 word banks. For each letter incorrectly guessed, one piece of a giant robot is put in place. If the robot gets completed, you lose. If you complete the word, the pieces of the robot already in place will explode. Robot Words 1 is an excellent spelling aid and is suitable for 5 to 8 year olds.



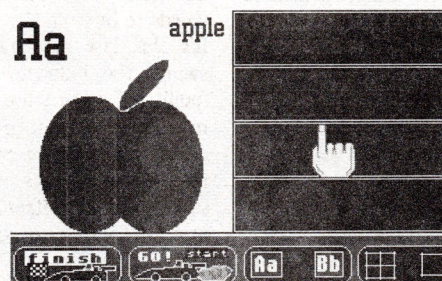
Word Race

This is another adaptation of the Hangman theme. A number of subjects are on offer including birds, food, house, colours, school. You enter a race against a computer player and each correct letter guessed advances you one step, a letter guessed incorrectly advances the computer player. Enough wrong guesses and the computer player will overtake you and win the race. Recommended for 5 to 8 year olds.



Moon Letters

This game concentrates on spelling. The word editor allows the parent to enter words the child is currently learning at school. On level 1, an alien appears for each letter and the relevant letter is displayed above its head. The aliens must be shot in the correct order. As the levels progress, you come up against time limits, words being displayed for a short period of time, the appearance of bogus letters and so on. Moon Letters will be enjoyed by children from about 5 to 8 years old.



Alphabet Mix

This program follows the same concept as Picture Mix. There are 26 pictures, each one representing a letter of the alphabet. As well as the picture, the letter is shown in both upper and lower case. The child can select from any of the 8 or 9 pictures in memory. Gameplay is identical to Picture Mix but without the added features such as the timer, different tunes, etc. Alphabet Mix is suited for ages 4 to 6 years. It familiarises the child with the mouse, and is suited to those learning to read.



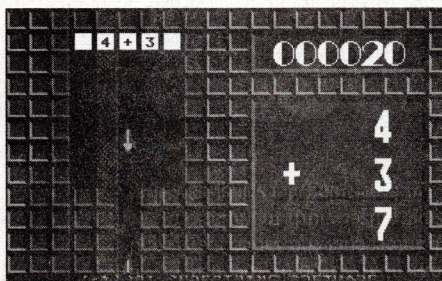
Drop Down Words

A memory game for 6 to 10 year olds. As the name suggests, words are dropped from above. As they descend, you have to type them in. To add a little variety to the game, they may be dropped from an airship, a glider, an aircraft or a helicopter. Type in the word correctly and a parachute opens and saves the day. On later levels the word vanishes before it hits the ground. One of the four word banks must be selected before you start and these can of course be edited to suit.



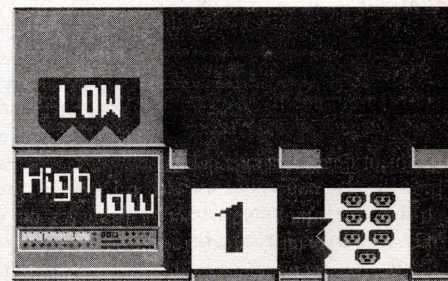
Picture Mix

Picture Mix is a game in which the computer jumbles up a picture and the child puts the pieces back in the correct places. The grid size can be set from 4x1 to 4x5 and the timer can be switched on or off. When on, it can be set to fast or slow. There are ten pictures to choose from and there are numerous skill levels. Five different tunes are available and if you don't like any of them, you can turn the music off. Picture Mix is simple to use and ideal for familiarising pre-school children with the use of the mouse.



All Blocked Up

All Blocked Up is a Tetris clone with an educational theme. Rather than random shapes descending, sums descend in the form of blocks. Type in the answer before the sum reaches the bottom of the screen. Entering an incorrect answer leaves you with less time to enter the correct one. If the sum reaches the bottom of the screen before you enter the correct answer, a row of blocks is deposited. If the blocks reach the top of the screen, the game is over and the death march plays!



Maths Fun 1

This consists of three games: High Or Low, Number Match and Simple Sums. In addition, the display can be as numbers, pictures or both. In High Or Low, two numbers are displayed as well as the word high or low. Simply click onto the box which displays the number or picture which is the highest or lowest of the two. Number Match is a case of clicking on one of the three boxes which matches the main display and Simple Sums involves clicking on the box which gives the answer to the sum. Suitable for 5 to 8 year olds.

Data Transfer

Two articles showing how data may be transferred between the ST and two popular portables: the Z88 and the Psion Organiser.

Atari Meets Psion

Dr. J.G. Learmont

This is an article which describes and reviews the software and hardware which can be used to allow the various Atari ST based computers to communicate and transfer data to the various versions of the Psion Organiser 2 hand-held computer. It also includes instructions on how to make your own modem lead cheaply.

Transfer of information in this way provides a very convenient way of carrying databases, files or programs around for business or pleasure. Many readers will be familiar with the Psion organiser range of hand-held computers, even if they are not fortunate enough to own one.

Psion make an excellent range of peripherals for all the above models, including datapaks and rampaks to expand memory storage. At the time of writing this article Psion have just launched a new "series 3" hand held computer, which has a Qwerty keypad, and is only partially compatible with the Organiser 2. The "series 3" also uses new peripherals, and is not therefore dealt with in this article. However, Psion affirm that they are continuing to make and support the Organiser 2.

The Atari "Terminal"

It seems to be relatively easy to connect any ST based computer to the Psion Organiser 2. I have tested the hardware and software which I am about to describe, on the ST FM, Stacy, and TT.

Getting connected

If you can perform basic soldering, then it is very easy and much cheaper to make the connecting leads yourself. The diagrams which follow show the plugs and connections necessary. Note that the leads described can be used as a modem lead to connect the relevant computer to a standard

modem (the 25-pin male RS232 "D" plug inserts into the back of the modem). For the purposes of this article, the 25-pin male RS232 "D" plug inserts into the female counterpart socket on the Psion Comms link cable. This is a special cable which must be purchased from Psion or a distributor such as Widget Software. The other end of the Comms link cable has a plug which contains the Psion communications software on ROM chips, and plugs into a port on the top end of the Psion Organiser 2. There is also a socket on this plug which allows a mains adaptor to be connected in order to save on organiser battery consumption. It is worth mentioning here that the Comms link connection box (at the organiser end of the cable) was modified internally for the LZ models, but Psion can quickly convert these for a small charge.

Software

Firstly, I should mention that if using a TT computer, it is necessary to "instruct" the desktop which modem port to use. This is done by altering the CPX configuration.

The cheapest way of getting started is to use a viewdata (and scrolling) Terminal emulator such as "Starterm". "Starterm" is a shareware program produced by Tony Price of Qualsoft, and is available from him for a small registration fee, or via Micronet. If you register, then you also receive a comprehensive instruction manual. To use "Starterm", load Starterm.prg, and then select the following settings on the Atari:

Teletype(VT 52) Terminal
ModeRemote
Baud-Rate.....9600
ParityNone
Flow Control...None
Stop-bits1

On the Psion organiser 2, select the following settings on the communications software, which is selected off the main menu:

Baud9600
ParityNone
Bits8
Stop-bits1
HandNone
ProtocolNone
EchoLocal
WidthNone
TimeoutNone
Reol(CR) (LF)
REOF< SUB >
RtrnNone
Teof< CR > < LF >
Teol< SUB >
TurnNone

Having done this, in order to send a file (e.g. an ASCII file) from the Atari floppy drive or hard disc, press <ALT> and <U> simultaneously. Then select ASCII protocol, select the file in question e.g. *****.DOC (note that the file suffix such as .DOC is not specific). Then prepare the organiser by selecting "Receive" on the Comms menu, then select Receive A : Main if you wish to save the file into the main file in memory A, otherwise use the mode button on the organiser to save the file to another destination. The next step is to select "Erase" or "Append" on the organiser menu; "erase" will scrap whatever is already in memory A, whereas "append" will add to it.

ST Communications Lead

Atari ST - Modem Port

Modem or Psion Organiser 2

Comms link

25-pin female

25-pin male

1.....	1
2.....	2
3.....	3
4.....	4
5.....	5
6.....	6
7.....	7
8.....	8
9.....	9
10.....	10
20.....	20
22.....	22

TT Communications Lead

TT - Modem Port 1 or 2

Modem or Psion Organiser 2

Comms link

9-pin female

25-pin male

1.....	8
2.....	3
3.....	2
4.....	20
5.....	7
6.....	6
7.....	4
8.....	5
9.....	22

The organiser screen will now show "Receiving A : Main", then press <Return> on the Atari, and you will see the data being transferred "on screen". <sub-head>Transfile ST CL

This an excellent, dedicated piece of commercial software available from Widget Software Limited, which is specifically for the transfer of data and programs between the Atari ST and Psion Organiser 2. It appears to run fully on the Atari TT. It comes with a comprehensive manual, and it runs from Desktop menus. It is fairly easy to use, and the only point that I would mention for beginners is that file suffixes are specific, i.e. a database file must have the suffix ".ODB", whereas a Psion program must have the suffix ".OPL". Remember that it is easy to change the suffix of a file using the "Show info" command on the GEM Desktop menu. The Comms setup on the Organiser 2 is the same as that described for Starterterm (see above), except set "Protocol" to Psion.

An easy way to get started in data transfer is to use a database program such as "Superbase Personal", on which you have set up a database. Then save the database file to disc as an ASCII file using the "export" command, and give the file the suffix ".ODB". This file can then be directly used with Transfile ST CL for transfer to the organiser, or with "Starterterm". For the more advanced user Transfile ST CL has endless possibilities. Another useful function is that all commands and transfers can be controlled remotely by the Organiser 2, so it should be possible to transmit and receive data down a phone line, using a modem.

Contacts:

"Starterterm" Shareware
Qualsoft
Tony Price
9 Walton Close
High Wycombe
Bucks. HP 13 6TX

Prestel MBX 919995034
BT Gold 74:MIK1129

Widget Software Limited
121 London Road
Knebworth
Hertfordshire SG3 6EX
Tel: (0438) 815444
Fax: (0438) 812046

Z88 - ST Link II

Mike Hutchinson

What is black, runs on batteries, comparatively slow and is the brainchild of Clive Sinclair? You would be wrong in thinking this might be a follow-up to the ill-fated C5. It is, in fact, the Z88 Computer produced by Cambridge Computers Ltd. You may be wondering what this has to do with the Atari ST. A new version of a link program, Z88-ST Link II, has recently been released by The Music Suite Ltd. which offers many possibilities to ST users who want to process text and data away from home.

For those of you unfamiliar with the Z88 it will need an introduction. It would be fair to say that this machine, released a few years ago, is unique in the computer market place. The unit is about the size, and weight, of an A4 note pad, including the batteries, which provide around 20 hours of working life. The LCD display consists of 6 lines of text 72 characters long. Two additional lines are used to display application information and TAB settings. For those who feel they need to see more of the page being worked on a screen map can be displayed on the right hand side of the screen with an indicating bar to let you know just where you are in the text.

Perhaps the most off-putting part of the machine for many people would be the rubber keypad. However, don't be misled by a appearances. It has nothing to do with the notorious keypad on the early Spectrums. It is almost silent in operation and the key spacing is wider than on the ST itself. It has no function keys nor a separate number pad.

The Z88 is never really 'off' because the unit needs to be semi-active in order to retain the information stored in it. There are in fact three ways of storing data. Firstly it can be retained as a 'suspended activity'. This is a RAM storage facility which enables you to leave a piece of work at any time, either text, spreadsheet, or a BASIC program, and then return to where you left off by selecting the item again from the INDEX page. You can have any number of 'suspended activities'.

The work can also be backed up as named FILES which again are stored in RAM. These files can

be handled in much the same way as you use files on a conventional disk. For more permanent storage the files can be written to an EPROM module which retains the information if the batteries fail or if the module is removed from the computer. These EPROMS are available in three sizes and their major disadvantage is that individual files cannot be deleted from them. To erase the data an ultra violet eraser is available which eradicates everything in the EPROM. You will find that the memory extension modules for the Z88 are about half the price of similar sized units for the ATARI PORTFOLIO.

Backing up information is just one of the facilities available on the Z88-ST Link program. The program is supplied with a lead to link the two machines. A small program first has to be loaded into the Z88. This is only a few lines long and is a combination of BBC Basic, which is built in to the Z88, and some CLI commands. Once installed this program can become a 'suspended activity' and switched on when required. The main program is loaded into the ST and this initiates the two machines to talk to each other. The ST will then list all the FILES it has found in the 32k RAM of the Z88 and its additional plug-in RAM packs. For a short time the ST keyboard takes over the Z88 because a new file has to be created in order to ensure that the Link knows where it is in the Z88. This little chore over and you are in business.

The Z88 does have the usual portable computer facilities of 'pop down' Diary, Calculator and Alarm, etc., but the main use is in and around the "Pipedream" program. This is essentially a large spreadsheet which functions also as a wordprocessor, with all the trimmings, and as a simple database by virtue of the 'search' facility. The details of this exceptional program are beyond the scope of this article, but it has been considered innovative enough for a PC version of Pipedream to be produced.

Selecting the files you wish to move is an easy process. A button will select all the files, or you can click on individual ones using the mouse. New folders can also be created from the program.

Given that your text processing, spread sheet and database information is in "Pipedream" format you have several options as to how the ST deals with it. It can simply be transferred by keying on the RECEIVE button as a Dump.DMP (back-up) file. This information is useless to the ST and is simply automatically transferred to a Disk. The program can convert at the same time as it transfers to a more useful database format if required. An additional program is included on the disk to convert 'DMP' files to LOTUS 1-2-3 format. The Dumped files can, of course, be transferred back to the Z88.

Alternatively, the files can be transferred, or intercepted, as Wordplus files or in ASCII format, for direct use in most ST word processor programs. The only information that gets lost on the way is the finer points of TAB settings. The way that the Z88 handles TABS has to be seen to be believed! Again, these standard .DOC, .ASC or .TXT files can be down-loaded back into the Z88.

Additionally the files can be printed via the ST. This may seem a rather superfluous facility until you discover the limitations of printing directly from the Z88. As supplied the Z88 only works with Serial printer inputs. In order to print to the more common parallel inputs a special lead is required which, because it contains some electronics, is rather expensive. The Z88-ST LINK II program will enable files to be printed from the parallel port of the ST.

If this is not enough it is worth considering that there are other link programs, available from various sources, to allow the Z88 to communicate with the BBC, PC, Amstrad PCW and Macintosh computers. A document written on, say, WORDSTAR on an a PC can be transferred to the Z88 as a text file. It can then be uploaded using Z88-LINK II to an ST and worked on in First Word Plus, and then the whole procedure reversed to return the modified document to the PC. Try that on a Portfolio!

The program comes with a small reasonably produced manual which, I feel, could be improved. The finer points of selective transfer of data, particularly in database format, will only be understandable if you have a good working knowledge of the Z88. Some caution has to be exercised in naming files since the Z88 can accommodate much bigger file

names than most other computers. It also has to be understood that no .BAK files are formed. Updates are given a number as a suffix to the filename, "INFO1", "INFO2", etc.

I did mention that the process is a little slow. This is not unusual in this type of application and it should be remembered that the Z88 uses a low power version of the Z80 CPU, a rather elderly device by today's standards. However, because several files can be selected to transfer in one session it does mean you can go away, make a cup of tea, and leave the 'LINK' to get on with the job. It will 'verify' the transferred data if required.

Comparisons have been made between the Z88 and the PORTFOLIO. However, I feel they really are two very different machines. With its much bigger keyboard and more versatile built-in software the Z88 is more of a working computer than a notebook. There is a good availability of second hand machines. These are usually from people who are upgrading to more conventional portables. A good place to start looking is in the user magazine 'Z88 EPROM'.

If your portable computing needs are mainly text and data processing then you need not be looking at the price, or power consumption, of a STACY. The combination of a conventional ST, a Z88 and the Z88-Link II program may be all you need, and more.

Suppliers:

Cambridge Computer Ltd.

1, Crompton Way
North Newmoor Industrial Estate
Irvine, Ayrshire
Scotland KA11 4HU

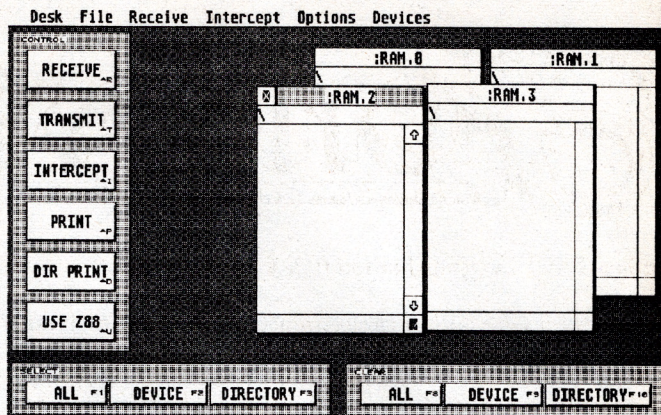
Z88-LINK II

The Music Suite, Cenarth
Newcastle Emllyn, Dyfed
SA38 9JN

Price: £34.95 (inc lead)

Z88 EPROM Magazine

68 Wellington Street
Long Eaton
Derbyshire
NG10 4NG



The control screen of the ST-Z88 Link program gives access to all the facilities available. When the program is initiated all the files in the Z88 are identified and listed in their respective windows. They can be selected for conversion by clicking on the individual file name or by using the select box at the bottom left of the screen. De-selection can be carried out using the boxes on the bottom right of the screen.

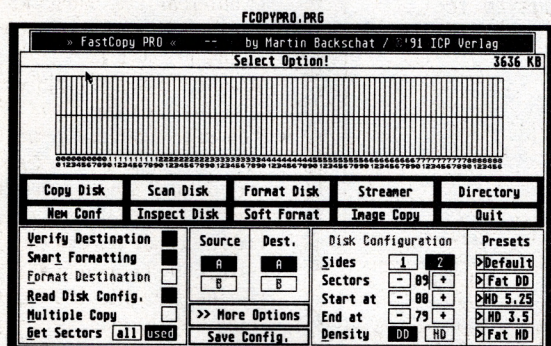
The CONTROL boxes on the left side of the screen initiate the commands to convert and transfer files between the two computers.

The 'drop-down' menus are used to set up conditions. DEVICES selects which windows to display. RECEIVE and INTERCEPT sets up formats for received and transmitted files.

Keyboard alternative commands are available to access most of the main functions.

FastCopy Professional

Lightning fast copy program and disk utility



The latest version of the number one ST disk duplicating software takes the concepts and features of FastCopy 3 and pushes them to the limits.

Features include:

- Copy disks: Only formats when required. Only reads those parts of a disk that contain data. Full verification. Intelligent handling of read/write errors.
- Format disks: Format up to 86 tracks and 11 sectors per track; MS DOS compatible disks.
- Save default settings.
- Pre-configure up to 5 default sets of parameters.
- Convert a disk into a file for archiving and comms applications.
- Fast hard disk backup with data-compression.
- Fully fledged disk editor built-in.
- Virus Detector, Killer and Immunisation.
- Support for High Density 3.5" and 5.25" drives.
- Works at 8MHz, 16MHz or 32MHz on ST, STE and TT.

Supplied with a ring-bound manual, FastCopy PRO is the ultimate disk tool for all ST users. FastCopy PRO is copyrighted and --not-- PD! See our order form on page 57

£24.95

Imagecopy

Copy images from screen and save them in IMG, Degas or RSC format. Images may be copied by pressing Alternate-Help, allowing you to capture images when the Accessory menu is not available.

Flexible rubber-banding system which allows images to be selected with a fine degree of accuracy.

Copies images from both standard and large screens (including virtual large screens such as MonSTer) in any of the normal ST/TT resolutions except TT low resolution.

Convert images to different formats. Imagecopy reads images in IMG, Degas, NEOchrome, Art Director, and Tiny format, and writes images in IMG or Degas format.

View images on a monochrome or colour monitor (colour images are dithered on monochrome screens). Up to four images may be displayed simultaneously.

Imagecopy is supplied as a desk accessory and as a stand-alone program. A fully illustrated manual is included.

Imagecopy	
Information	I
Alt-help keys	A
Image format	F
Image colours	L
Printer type	T
Print options	O
~~~~~	
Copy image	C
Convert image	X
Save image	S
~~~~~	
View image	V
Print image	P
Print screen	D

Print images and screen dumps in a variety of resolutions on a range of different printers, including: 9-pin or 24-pin Epson-compatible dot-matrix printers, Bubblejet printers, and Deskjet and Laserjet printers. Print speed is much faster than normal GDOS output.

Coming soon:
Imagecopy Colour

The ST Club

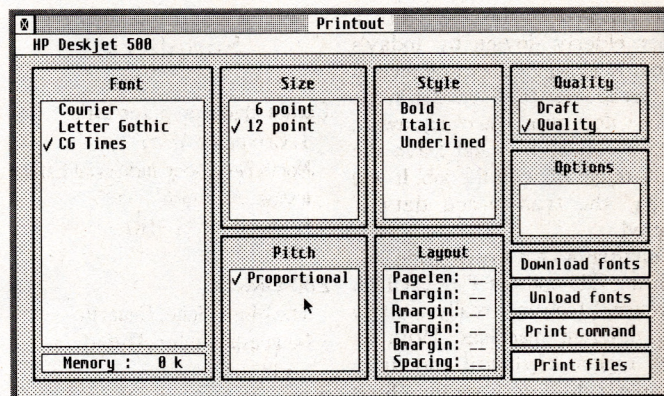
2 Broadway
Nottingham
NG1 1PS
Phone (0602) 410241

£9.95

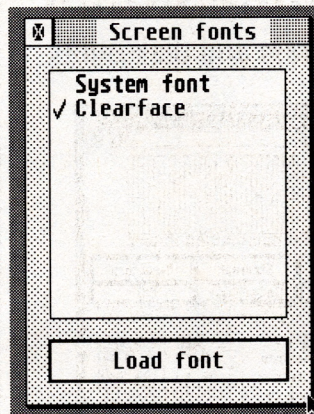
Fontswitch V4

David Smith outlines Fontswitch 4's new features:

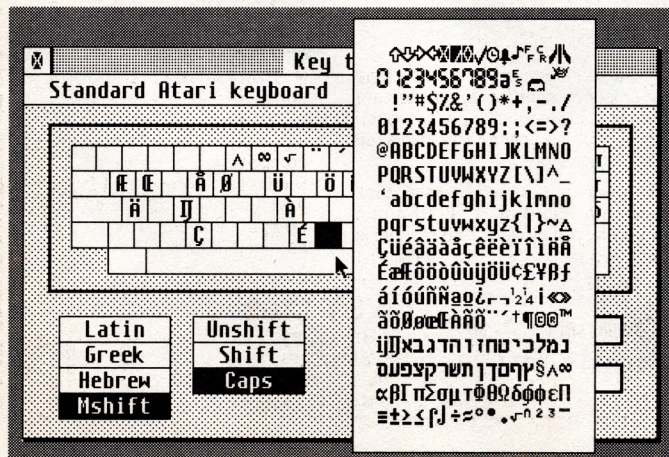
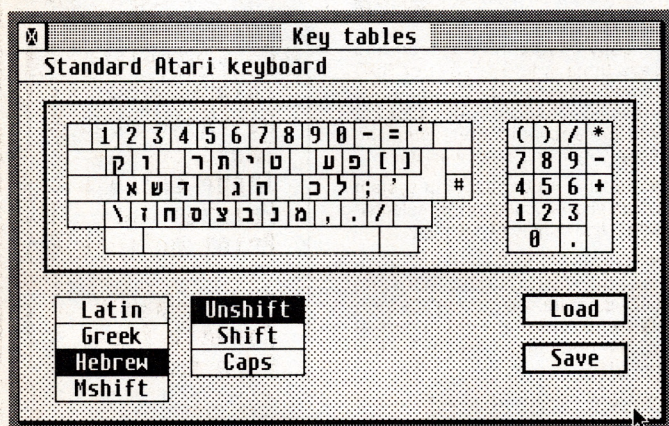
- * Fontswitch 4 consists of a memory resident program (FSW4.PRG) which is loaded from an auto folder, and separate accessory or stand-alone programs which the user can interact with.
- * There are stand-alone versions of the individual modules which can be used instead of the accessory version.
- * Dialog windows can be moved or left on screen when they are not being used.
- * Printout contains print-spooling and batch-printing facilities.
- * There is a stand-alone version of the complete Fontswitch program, in addition to stand-alone versions of the individual modules.
- * Keyboard shortcuts have been implemented. In addition to those listed in the menu, Alt-C can be used to close windows (as in Fontkit). Alt-F (F for Fontswitch) can be used with the accessory version of Fontswitch to display the submenu, so long as one of Fontswitch's windows is the current window.
- * PDRIVER.TOS compiles ASCII PDF (printer definition) files into Fontswitch PCF (printer configuration) files.
- * Fontswitch 4 can be used to download fonts to HP- or Epson-compatible printers.
- * The Deskjet and NEC P6 drivers are configured to include resident fonts which are specific to these printers, whereas the Epson9 and Epson24 drivers are generic drivers which should work with any Epson-compatible printer.
- * The stand-alone versions of the Fontswitch utilities can be used in place of the accessory version to change screen fonts or download printer fonts (etc.) without being permanently loaded into memory.



- * FSW4.PRG can be used without any separate accessory or utility program to change the default screen font and keyboard layout, or to access metashift characters.
- * Fontswitch 4 is self-configurable: click on 'save defaults' to save the current settings permanently.
- * Additional fonts which are loaded at boot time are specified in a file called FSW4.LIS. This is a simple ASCII list of font path names, which can be created and edited using Filelist.
- * In addition to downloading and selecting fonts, etc., the Printout utility can also be used to print files; these may be ASCII files or binary printer files produced by a 'print to file' option in another program.



- * Another new Printout feature is a batch option for downloading a series of fonts or printing a number of different files. Batch files are simple ASCII texts containing pathnames such as 'g:\dlfonts\bkml20r.djp' or 'a:\plus4\read.me'.
- * The 'print command' option in Printout can be used to send user-defined printer codes. If you commonly need to send a particular code sequence you can click on the 'save' button to save it as a binary file, and then print it using the 'print files' option.



Product:.....Fontswitch v4

From:The ST Club
2 Broadway
Nottingham
NG1 1PS

Tel:.....0602 410241

Price:.....£14.95

Upgrade:P: from Fontswitch 3 - £6.95

Please specify the upgrade code (P) when ordering and return your master disks. Fontswitch 3 is no longer available.

◁ The Key tables: Click on the keyboard title to configure metashift keys etc; you can also name keyboard configurations. Editing keyboard layouts is much easier than previously: click on the key you wish to alter and then select a character from the pop-up table which appears at this point. Metashift keys can be used with MultiTOS (not possible with Fontswitch 3), and they are also available from Protex in its native keyboard mode.

TV/Mono Monitor Switch Box

by Sam Marshall

So there I was: I'd gleefully unpacked my new mono-monitor, shifted the telly contemptuously to one side, and was fiddling about trying to connect it to the ergonomically-positioned monitor socket when I snapped off two of the pins (argh!). It looked as if I'd either have to find a better way to switch outputs or never play Llamatron again. Dave Henniker recently described a DIY Mono/Colour switch box which would work for a TV, but it isn't simple, and he (rightly) assumes that if you're playing with the mains, you know what you're doing. Here I aim to describe the much simpler project of a TV/Mono monitor switch box, using a step-by-step guide in the hope that even those who don't know a soldering iron stand from their earhole will be tempted to have a bash (and soon learn the difference).

How it works

One of the outputs from the monitor socket is a 'mono detect' line. When a monochrome monitor is plugged in, this pin is connected to

ground, and the ST knows it has to boot in high resolution. Without it the ST assumes a colour display is attached. Hence to change between a TV and a mono output, all we have to do is toggle this connection - the RF TV cable can remain plugged in.

Components

The necessary bits are:

- 1) A small box around 3cm x 7cm x 5cm (h x w x d). Plastic is easiest to cut.
- 2) A small 2-pole toggle switch.
- 3) A short length of shielded seven-core cable (this should be kept as short as possible, or the signal quality may deteriorate. 10 - 15cm should be adequate).
- 4) A 13-pin DIN plug.
- 5) A 13-pin DIN socket (but see below).
- 6) Rubber grommet(s) to secure the cable(s) in the box.

You will also need: a micro-point soldering iron, a sharp knife (if using a plastic box), a suitable drill, and a small screwdriver for fastening the lid.

Various short-cuts to the box

can be made. In particular, 13-pin DIN sockets are rare beasts, so you may (as I did) want to simply remove the monitor plug and solder to the cable wires directly (the plug should slip off quite easily by lifting up the small plastic lug on the side and pulling backwards). This makes the box a fairly permanent attachment, though the old plug can always be re-fitted if necessary. The *really* frugal could even sever the monitor's existing cable and insert the box without any of the hassle of soldering onto socket pins, though this could be regretted if things go wrong! I'll describe the making of the socketed version as this is the most complete.

Procedure

Ensure you have plenty of workspace, and somewhere to rest the soldering iron. Have a damp sponge or cloth handy to wipe excess solder from the iron. If you're very inexperienced at soldering, practise on a few bits of wire first - there are only a few pins to hook up, but they can be quite fiddly.

a) Cut holes in the box ends for the cable and socket, and in the lid for the switch.

b) Solder the cable to the 7 pins of the rear of the plug, as shown in figure 1. Thread the other end of the cable and the rubber grommet through the hole in the box.

c) Connect the wire fixed to pin 4 (the mono-detect) to the 'in' contact on the switch, and the wire from pin 13 (ground) to one of the 'out' contacts of the switch.

d) Now solder the remaining five wires to their corresponding external socket pins, and join the ground line from the switch to pin 13 of the socket using a short length of extra wire.

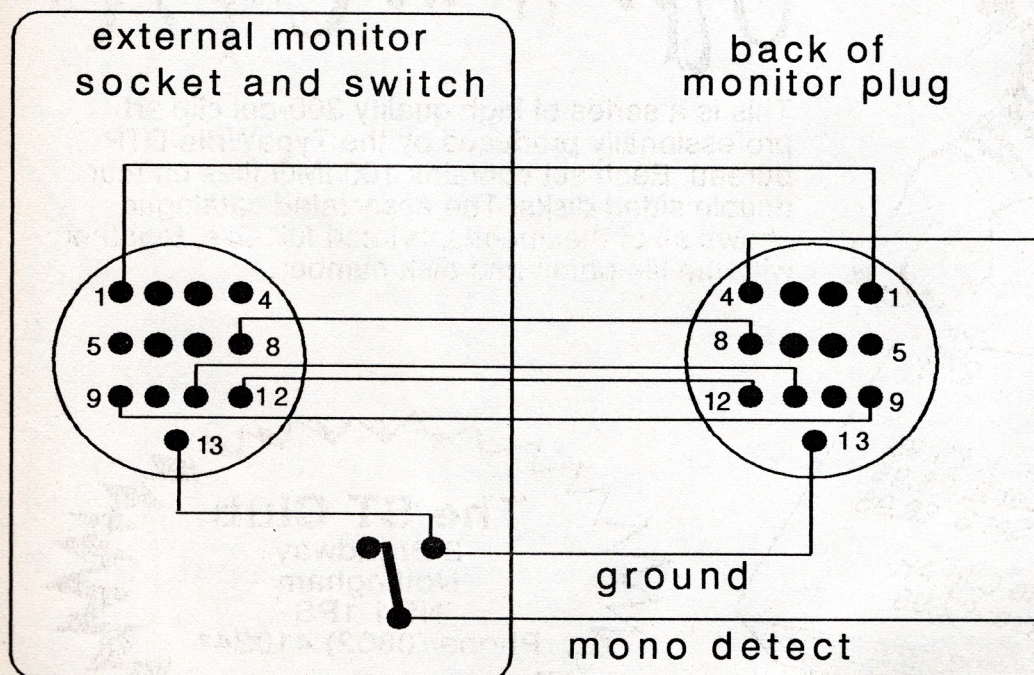
e) After checking that all the connections will hold, and that there are no short circuits (be especially wary of solder making contact with the shield of the plug), secure the socket to the box.

f) Bolt the switch to the lid of the box, and screw it shut.

g) Look chuffed.

Operation

Toggling the switch will re-boot your ST in the appropriate resolution. To be safe you should ideally turn off your ST and current display before switching over, turning on the TV/Monitor, and then re-booting. The usual disclaimers about things going bang apply.



△ Figure 1: Wiring diagram showing connections from monitor plug to external socket and mono-detect toggle switch.

13-pin DIN female sockets should be available from Best Prices (or 'Chips Mail Order', as they now wish to be known), 53 Rugby Road, Worthing, West Sussex BN11 5NB (tel. 0903 700714). All the other parts should be available from your local electronics shop, or from Maplins Electronics, PO Box 3, Rayleigh, Essex SS6 8LR (tel. 0702 554161 for sales or 0702 552911 for enquiries).

Multiprint

Multiprint is an intelligent printer buffer that records data sent to your printer via the parallel port or serial port. Multiprint is controlled by an intuitive dialog box with VCR style buttons. Features include:

Replay of recorded data for high speed multi-copy printing of letterheads or leaflets.

Saving of data to printer file (*.PRN or compressed *.PCN) and loading of buffer with previously created printer file - for quick'n'easy reprinting at a later date. No need to rerun your DTP or art program.

Option for compressed buffer and printer files for minimum demands on memory and disk space. Average 300 dpi DTP data compressed to 40% of its original size.

Load and print printer files produced by other programs - and compress them to Multiprint's own PCN format for better use of disk space.

Background printing with "Priority Delay" allows you to share a chosen percentage of your computer's time with Multiprint.

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The ST Club

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Available from
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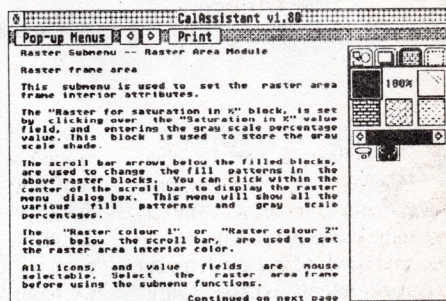
Cal Assistant

The Online Help Companion for *Calamus 1.09n*

£19.95

Fully inclusive.
Order form - page 57

Also available:
PageAssistant
for PageStream 2
just **£29.95**



- CalAssistant is an accessory program that runs on top of the Calamus software providing online help for each function.

- Includes a 40 page manual packed with tutorials and much, much more.

- Printer drivers included for use with the CalAssistant print command. Send the online help text to printer for hardcopy reference.

- Text, icons and pictures are used to illustrate, explain, and give tips on functions step-by-step.

- Includes complete Helvetica font set (Regular, Italic, Bold, BoldItalic), and requires just 145K of memory.

- Supports pop-up overlapping menus, monochrome and monitorm monitors, and virtual screen drivers such as MonSTER and BigScreen.

Coming soon:
CalAssistant SL

The ST Club

2 Broadway
Nottingham
NG1 1PS
Phone (0602) 410241



TypeWrite Clip Art

This is a series of high quality 300-dpi clip art professionally produced by the TypeWrite DTP bureau. Each set contains 100 IMG files on four double sided disks. The associated catalogue shows all of the images, printed full size, together with the file name and disk number.

The ST Club

2 Broadway
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NG1 1PS
Phone (0602) 410241

A5 binder to hold clip art pages: £2.25

Grafix Arts

by Paul Keller

TECHNIQUE – Colour Palettes

We covered colour in some depth last month under the topic of anti-aliasing, and this month we will be extending our coverage on the subject.

Colour Options

The ST range of computers have three graphic modes: low, medium and high. Low resolution mode can have a colour palette containing up to 16 colours (un-extended palette) in any one picture. Medium resolution can contain up to 4 colours, and high resolution 2 colours (B/W). These colours (except for high resolution mode) can be selected from a still larger palette (global) of 4,096 colours (STE) or 512 colours (ST/STF/STFM) described last month under RGB.

We will again take low resolution (16-colour mode) as our example for the following discussion on colour palettes.

From our 16-colour palette one colour is used for the background. This background both fills the border (outside of work area) and paper (work area) of our screen. Normally it is set to black or white but can easily be changed to whatever colour you may require within the global colour palette range available. When drawing any pictures on the ST I tend to set the background colour to black because it does not take any emphasis away from the main picture and also helps give it more impact. Black is also the darkest shade available (0,0,0) and as such can be an invaluable darklight (reverse of highlight) in the use of adding depth to your pictures.

White is the other colour which I usually automatically place in my colour palette selection, it being the brightest and best highlighting colour available: (15,15,15) STE, or (7,7,7) ST.

When these two colours (B/W) are combined with other colours they can add impact and life to your pictures because of their high contrast values.

Colour Shades

We are now left with 14 colours to choose for our 16-colour work palette. If you are copying some reference you need to look care-

fully at this and determine the main colours in the picture. To these colours you assign the greatest range of shades, e.g. in a picture of a landscape the main colour area would most probably be green (6 shades of green) merging to brown (4 shades of brown) perhaps a river (4 shades of blue), not forgetting the blue sky. You could get away with one blue colour for the sky, the lightest blue from one of the four already selected in our example for the river.

If you have an art package with an extended colour palette such as "Canvas" or "Spectrum 512" you could add a vast range of blues to the sky, lighter nearer the horizon while darkening as you increase your distance from this. I will be covering extended colour palettes at some stage in the near future and how to get the best out of them.

When we have decided on our colour work palette it will probably need moving around a little. A pen and paper can be handy at this stage to write down the RGB colours for reference. With so many different art packages available for the ST there are many different ways of storing the 16 colour work palette, the main difference being the relation of the background colour to the rest of the palette. Some packages place the background colour at the front of the palette range, while others place it at the back. With the following example this should be born in mind. Taking our landscape example and "DEGAS ELITE" as our programme palette example, the following colour palette is something similar to what I may choose for a landscape picture with sky, hills, pasture, bushes, trees, and a nice little river: (0,0,0) (0,1,4) (0,2,6) (1,4,7) (4,5,7) (5,3,0) (4,2,0) (3,2,0) (2,2,0) (0,2,0) (0,3,0) (0,4,0) (2,5,0) (3,6,0) (5,7,0) (7,7,7). I recommend that you copy this palette in the said order into your own art package for viewing.

You will see from this that not only are the colours blocked together i.e. blue shades, brown shades, green shades, but that also they merge into each other wherever possible: colour (2,2,0) dark brown next to (0,2,0) dark green and (5,7,0) green-yellow. This merging gives you greater detail because of the similar contrast levels when carefully utilised in your pictures. The other

point to note is that each colour range is also in a contrast order i.e. either dark to light shades or light to dark shades. This is useful should you for example wish to use an air brush mode with a range of greens and very quickly build up some bushes, or by selecting the brown range and drawing up a rectangle to form the very rough base for the trunk of a tree.

Colour Changes

It does make life easier getting your colour palette right before you start your pictures. Should you be half-way through your picture and decide you need to change one of the colours it could cause a major problem, bearing in mind that everywhere you have already used that colour will also be changed to the new colour.

This can be used to advantage if you wanted to brighten up your whole picture; all you need do is add 1 to all the palette figures e.g. (1,1,1) (1,2,5) (1,3,7) (2,5,7) (5,6,7) (6,4,1) (5,3,1) (4,3,1) (3,3,1) (1,3,1) (1,4,1) (1,5,1) (3,6,1) (4,7,1) (6,7,1) (7,7,7).

Note that some art packages can do this for you automatically by your selecting the appropriate command within the art package. "Spectrum 512" is excellent at this colour palette changing technique.

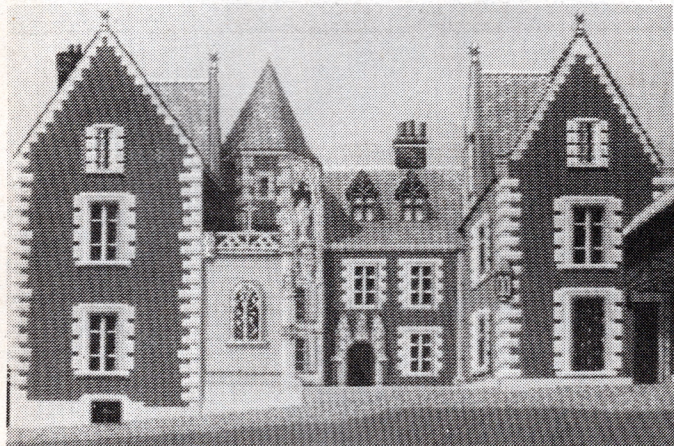
To add more red to the picture, add 1 to the first figure of each bracket, to add more green add 1 to the second figure, to add more blue add 1 to the third figure. As well as brightening the picture you can darken it by taking away 1 from the figures above. E.g. to change the whole river to a darker shade of blue we need only take away 1 from the blue shade range (1,2,5) (1,3,7) (2,5,7) (5,6,7) -1 to give (0,1,4) (0,2,6) (1,4,6) (4,5,6).

It should be noted that when either the red, green, or blue registers are at their maximum i.e. 0 or 7 (ST) or 0 or 15 (STE) they cannot go beyond this and so have to stay at the same level. Too many alterations by adding brightness or darkness to your picture could mean you end up with either a totally white page or totally black page. It is recommended you always save your pictures before experimenting in such ways.

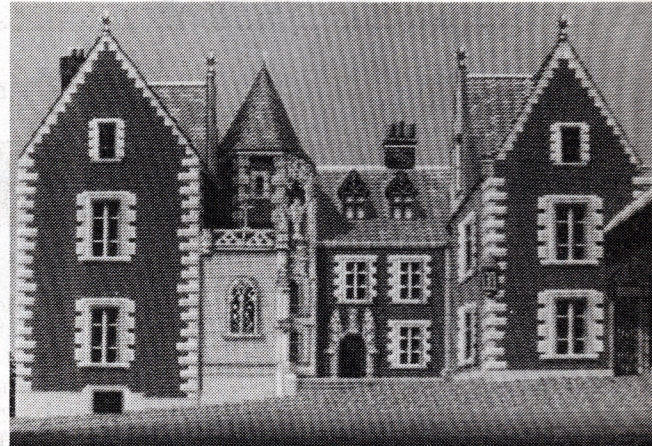
Next Month: Highlights

On the box

Leonardo's Manor



(5) More detail was placed on the tower's stone work in zoom mode. I took out the boarded-up windows on the left side of the house and replaced them with glass ones of that time. This felt more inviting than showing it a little run down, and is a great advantage of the computer over any other form of art when such changes are deemed necessary. I also erased the star-shaped lump on the grass (this was to be a flower bed) as I felt this drew too much attention away from the house I was trying to make stand out. The corner blocks were added to the side of the house, thus giving more depth to the picture.



(6) Here a couple of windows were improved in ZOOM mode, and I also set up one extra colour palette for the grass. This was done to put more colours on screen for a better effect. By setting the second colour palette zone at the grass area on the screen, I split the screen into two palettes: top for first palette, bottom for second. All alterations with the extra colours in the grass area were made with the second colour palette selected. This is easy to work with on simple things such as the grass in this case, but takes some getting used to. It enabled me to display an extra 5 colours in this picture: a total of 21 colours on screen.

Next Month: Madonna 1/2

TOOLS – Text

As a form of expression some text can sometimes be essential to explain something of your picture creation. Unfortunately, this seems to be one of the worst implemented tools of any of the ST colour art packages using bitmap fonts, (fonts which are not resolution-independent i.e. if enlarged or reduced they lose their definition). The fonts that are normally supplied are so few, and not very inspiring to the would-be artist.

Although most ST colour art packages are not very supportive of the text tool, there are other ways of getting beautiful, detailed, varied fonts into your ST colour pictures.

In the following discussion we look at one of the solutions to this problem and it is the best method I have found of getting professional fonts into my own bitmap art pictures. NB: you will need a 1MB machine to run the Calamus demo.

You will need the Calamus demo disk obtainable from the ST Club and whatever other Calamus font disks you can also get from the PD. You will also need a snap-shot programme.

First you need to install whatever type of snap-shot programme you have, whether accessory or programme, preferably using a

mono monitor, but if you only have a colour TV or monitor use a mono-emulator and run the Calamus programme. If you haven't used Calamus before you're in for a bit of an initial shock. With its vast range of icons, things can look confusing to the beginner, but most icons are fairly intuitive, with a help message top right of the screen telling you what the icon the mouse arrow is currently over does.

I will let you have the fun of working out how to use the programme, as here I only want to explain the principle.

By using VECTOR fonts (those that are resolution-independent i.e. can be enlarged or reduced without loss of definition) we can get the exact size of text we wish and also a very

large range of differing type styles to choose from.

When we have created our typographical masterpiece we save the screen as a picture by use of our snapshot programme.

Having quit Calamus, all that remains to be done is to transfer this Mono picture to colour low resolution for use in your bitmap art package. Degas Elite is one such graphics package which has this facility; the transfer is excellent, but a few extra colours are used in the emulation of high resolution mode around the edges of the text. When in your colour art package you can easily colour the text to whatever you like and then transfer this text as a block to be used in a picture you might be working on. This method is one of the quickest and most professional ways of getting high quality text into your colour bitmap pictures.

Next Month: Patterns

Bitmap Font Vector Font Vector Font

Last Words

"The beauty of nature reminds our soul of life and of what is beyond it!"

Vasili Zhukovsky

PD Update 12.7

All disks are double sided unless otherwise indicated.

Clip Art

Most of the images in this collection are IMG format files.

SSM.53: ANIMALS A: 30-geese, Aligato2, Aligatir, Animals, Animals2, Animals3, Babydeer, Badger, Bear, Bear2, Bears, Bee, Beetles, Bird, Bluetit, Bruco, Btrflys, Bttrfly, a:birds, Blakbird, Cutebird, Deluxduk, Duklings, Duogeese, Falcons, Flycrane, Flygoose, Gamecock, Geese, Goose, Hartbird, Jalbirds, Mailbird, Mallard, Parakeet, Peacock, Pelican, Raven, Redtail, Rivrswan, Rooster, Soarhawk, Swallow, Swimsan, Tinybird, Wytedove.

SSM.54: ANIMALS B: Butterfly, Buttrfl2, Buttrfly, Cat, Cat2, Catpilla, Cats, Cheata, Cheata2, Cheetah, Cheetas, Cheshcat, Cheshire, Chipmun2, Chipmunk, Cougar, Cow, Croc2, Deer, Dodo, Dog, Dog2, Dogs, Dogs paw, Duck, Eagle, Elk, Fox, Foxhound, Foxy, Frog, Giraffe2, Goat, Gorilla, Hedgehog, Hiipomon, Hippo, Horses, Horses2, Hound, Insects, Jaguar, Jaguar2, Madgoat, Madtiger, Nanygoat, Octopi, Olga, Owl, Owl1, Owlcatra, Pelicans, Penguins, Pets, Pets2, Puscot, Rinos, Rooster, Snake, Tartarug, The fly, Tiger, Tigers, Toad, Tortoise, Whales.

SSM.55: DTP ITEMS A: Arrow005 to Arrow029, Arrows, Arrows2, B1, B2, Billboa, Bordbaby, Borders, Borders1 to Borders6, Border a to Border t, Clips_1 to Clips_5, Columns2, Columns3, Corners, Corners, Designsl, Desktop, Desserts, Dingbats, Endpiec1, Endpiec2, Feline, Figur_01, Figur_02, Figur_03.

SSM.56: DTP ITEMS B: Figur_04, Films, Flowers a to Flowers j, Flowers l, Fonts1 to Fonts10, Font_a to Font_d, Font_1 to Font_4, Header 1 to Header 3, Header_d, Headng01 to Headng08, Logos_1, Logos_2, Menu, Motif_1 to Motif_3, Winelst.

SSM.57: DRAGONS and GOBLINS: 2gobsold, 3gobwarr, Black, Blue, Fire, Gob1, Gob2, Gob3, Gob4, Gob5, Gob6, Gob7, Gobliidog, Gogsoldi, Orccomma, Orent, Princess, Red, Tail, Troll.

SSM.58: ENGRAVINGS: Zac30 to Zac69.

SSM.59: FAMILY: Clowning, Dadnbabe, Dinner, Family1 to Family6, Hugs, Hugs2, Momdadby, Monopoly, Naptime, Nursing, Ourfamily.

SSM.60: FOOD: Foods26 to Foods42, Fork, Friedegg, Fruit, Fruit001 to Fruit019, Vegtab01 to /egtab29.

SSM.61: LOGOS: 1stnatl.

7up, Access, Amoco, Amx, Atari, Atarifra, Aw, Banko, Bd, Burgchef, C, Cadi-2, Cadi-3, Cadillac, Canadadr, Chevron, Chevy, Citgo, Clark, Coke, Coke2, Collees, Crush, Dairyq, Datsun, Datsun2, Davinci1, Deeprock, Diners, Drpeper, Dunkdonu, Dupont, Dx, Efhutton, Esso, Foodsym, Pepsi, Pirate, Simbolar, Smarties, Springmd, S_clip_2, Telefon2, Ventura; 1930s LOGOS: 01 to 36, Cb_02.

SSM.62: PEOPLE: Boy00001 to Boy00012, Crowd, Girl0001 to Girl0016, Kid1, Kid2, Kid3mum, Kid4, Outdoors, Poolside, Reading3, Reading4, Skate1, Woodshop.

SSM.63: XMAS: Holly, Merrychr, Santa, Santa1, Sclaue, Sleigh, Snowman, Snowman2, Snowman3, St_nick, Xmas, Xmas02 to Xmas15, Xmasart1 to Xmasart4, Xmascard, Xmasree; SANTA: Sbagfull, Sfpace, Slist, Ssleigh, Swindow.

Colour Art

DMJ Spectrum 512 Picture Collection. Most of these pictures were converted from GIF files using DMJ GIF 3.0, although quite a few were not. Several of these are STe pictures: they look best when displayed on an STe or on an ST using SPC-3375 on disk SSC.100.

SSC.100: Animals 1: Bears, Bee, Cats_03, Cats_04, Cheetah1, Chimp, Chipmonk, Cobra, Ducks, Eagle, Eagle, Eagle1, Eaglefac, Horses, Lynx, Macrow, Mouse, Owl, Parrot, Redarrow.

SSC.101: Animals 2: Bears, Bears2, Cat85, Falcon, Froggy, Gecat1, Husky, Killy, Suncat, Tiger, Toucan, Wettiger, Whale.

SSC.102: Comics: Bill, Bugs, Bugsbuny, Calrasin, Calvin2, Catfud, Fantasia, Footlucy, Garfield, Howard, Mickey, Mickey2, Odie, Opus, Pro_vkil, Roger, Roger_rt, Spuds, Wiley, Wizard, Workcats.

SSC.103: Fantasy: Bodicea, Chldream, Damsel, Darkwell, Devil, Fantasy8, Dragon71, Dragon72, Dragon76, Dr_hoard, Forest, Hatchlin, Kforest, Kingsdrn, Lordlady, Maker, Unicorn.

SSC.104: Fantasy 2: Dragon, Knight, Lance08, Lance10, Leader, Midearth, Nimrod, Nymph, Pern, Pipeape5, Ravenfan, Realms2, Realms3, Realms4, Realms5, Saiface, Underwrd, Unicorn3, Unicorns, Wizards.

SSC.105: Fractals: Frac0, fractal, Fractal2, Fractals, Golddrag, Mandel, Mandel, Mandel2, Marble2, Nausea,

Nausea2, Nausea3, Pixeldrm, Planet3, Siofade2, Slowfade, sunburst.

SSC.106: People: Amber, Aquagirl, Athena, Badspock, Bikini, Budgirl, Cathy, Clown, Demon, Digi, Fashion, Girl, Girlscout, Img_dude, Joker, Kim, Madonna, Paula, Profile, Someone, Vanna, Vincel2, Vincelor, Walkcolr, Wingfite, Yoda.

SSC.107: People 2: Alison, Amber, Bangles, Denise, Ehts0011, Elite01, Fawcett2, Gibson4, Girl, Golf, Julie2, Lady04, Madonna, Moonlite, Papasan, Samburu, Spockirk, Tina, Trekcrew, walk.

SSC.108: People 3: Albert, Ann2, Astronat, Blade1, Greeneye, Kahn, Kirk, Picard, Picard1, Portrait, Scotty, Sigirl, Spock, Spuds, Surprise, Swim1, Wendy.

SSC.109: Places: 29-10, Alaska1, Alaska2, Amer04-1, Balloons, Boondocs, Bridge, Comet, Garmisch, Grandcan, Lghthse, Lunarts, Magicmtn, Marsface, Omaha, Sunset, Sydney, Tomb, Trees, Uranus, watrfall, Winter.

SSC.110: Places 2: Cast01-i, Earth7, Eclipse1, Ehza0006, Germany, Horsehea, Hstsat, Jan2, Jul, Jupiteio, Jupiter, lander2, Lush, Marsface, Nature, Oct, Redspot, Sample, Sanctuary, Saturn3, Station2.

SSC.111: Places 3: Fall, Lscape2, Lunrflag, M31, Mountain, Orient, Sunset, Tfa0284, Travel11, Vermont2, Voystrn.

SSC.112: Raytrace: Arch, Atakship, Bumpy, Bumpy2, Chess, Chess2, Crosseye, Crystal, Dmj_gif, Enterprs, Eyeball, Glass, Goldbot, Icecream, Image13, Klingons, Mac2_ray, Museum, New_tek, Pac2, Pac3, Pyramid, Red-bird, Solid4d, Table.

SSC.113: Things 1: 3rdstage, Apollo10, Batlogo, Battle, Bf_110s, Blastoff, Bulb, Countach, Crank, Ed2091, F-15A1, F15se, Falcon3, Ferrari, Flag, Frbd, MIG25, Modelt, Noc1701, Rose, Shuttle, Stardest, Tiefigh2, Tiefert, Tower, Tree2, Tl2, Vette, Xwing, xwing2.

SSC.114: Things 2: Crank2, Ferr40, Globe, Jovian, Lamb, Nicepic, Ninja, Porsche, Redwing, Rescue, Sailboat, Sailing, Shuttle2, Skull, SR71, Termii01, Train, Warhamr, Warrior.

SSC.115: Things 3: 1701D, Blastoff, Coors, Destro, Ferr40, F_348, F_40, f_gto, Globe, Jetfiter, Nasa25, Robbie, Rose, Saturn, Skylab, Spacesta, Sunset, Taxi, Virus, Wine, Yummy, Zip1tank.

Fonts

FON.128, FON.129 and FON.130: Fonts for MegaPaint - wide variety of fonts including Symbols and foreign alphabets. Converted from PD Signum fonts by Frank Hollis. (DS)

Graphics

GRA.148: Futuretime V: Cyberstudio animations by Neil Donnan. Strange creatures feature in four short sequences of alien lifeforms. (DS:C)

Information

INF.46: Dictionaries: 26 dictionary files in plain ascii for use in wordprocessors and spelling checkers.

INF.47: 4Meg Veroboard upgrade: comprehensive DIY instructions, text plus illustrations, for upgrading your ST. Soldering abilities required.

ST Report

The major on-line Atarians magazine in the USA:
INF.43: Updated to include STR7.41
INF.48: 7.42 to 7.47
INF.49: 7.48 to 8.03
INF.50: 8.04 to 8.08

STEN

ST Enthusiasts Newsletter - Britain's premier on-disk magazine for ST users:
INF.51: STEN #1
INF.52: STEN #2
INF.53: STEN #6
INF.54: STEN #11

INF.55 and INF.56: DBA DISK MAGAZINE 5 - A disk mag in English from the Dutch Disk Busters Association. Lots of varied articles and PD programs. (DS:C)

MIDI

MID.69: Users' Guide to MIDI and Music Technology - covers Synths, Drum machines, MIDI, Multitrack recording effects, Sequencing and software, buying second hand equipment, and using MIDI equipment. Supersedes version on disk MID.26.

Utilities

UTI.211: Family Tree v1.32 - update of this comprehensive

genealogy package first released on Disk Mag DMG.30. Now includes illustrated manual on disk in both TEX and First Word formats.

Wordprocessing and DTP

WPR.107: Calamus Winners: The winning entries in the ISD Marketing 2nd Annual Calamus Creativity and Design Contest. Submission include: business card designs, logo's, fonts, freehand drawings, posters, illustrations, cartoons and graphical effects: all created using any one of the Calamus family of products: Calamus, Outline Art, the Font Editor, or any combination of the three.

PDD.92: TeX: this disk now includes English translations by Roger Gain of the TeX documentation from Stefan Lindner's implementation; and the text files (ASCII) and examples for the ST Applications series TeX from the Top.

Licenseware

Budgie Games
£2.95 each

GBU.108: Square Off - by Andrew Oakley. Fifty levels of grid escapism. Travel along the best possible route to reach the entry to the next level whilst collecting as much cash as possible. This Budgie version has tracker music, speech and a separate level editor. (C)

Shoestring Educational Titles

- £2.95 each
See review on pages 19 to 21 for details.

LCW.01: Robot Attack
LCW.02: Moon Letters
LCW.03: Picture Mix
LCW.04: Robot Words
LCW.05: Alphabet Mix
LCW.06: All Blocked Up
LCW.07: Word Race
LCW.08: Drop Down Words
LCW.09: Maths Fun

LCW.01 to LCW.09 run only in colour and are on single sided disks.

Prices

Up to 6 disks - £1.45 each
6+ disks - £1.25 each
10+ disks - £1.00 each
25+ disks - £0.85 each
Licenseware disks - £2.95 each
Our Order Form is on page 57

TEX - from the top!

By David Harvey

The last article in the series demonstrates tabs and tables, traditionally areas of difficulty in typesetting. To conclude, I have given some suggestions for further reading: some guide-books for travellers on the road to TeX mastery!

Lining up text

Vertical alignment of material has long been a typesetter's bugbear. What is a simple matter for a typewriter or computer printer using a fixed-size font becomes fraught with problems when the variable character widths of a typesetting font need to be taken into account. TeX unsurprisingly provides several different ways of specifying alignment. The simplest of these uses the command `\settabs`, which sets up positions for vertical alignment in a way similar to the tab stops in a typewriter. The following command, for example, divides each line into six equally-sized fields:

```
\settabs 6 \columns
```

To use the tab settings, a line must be preceded by the control character `\+`. The ampersand character (&) is used to delimit the contents of each field, and the whole line is completed with the control sequence `\cr` as in the following (see Figure 1):

```
\settabs 4 \columns
\+ Column 1 & No. 2 & III & four! \cr      %% (1)
\+ & this text starts in column 2 \cr      %% (2)
\+ \it first & & & fourth \cr              %% (3)
```

The first line demonstrates a simple use of the tab positions, the second starts with an empty field, and the last has both middle fields empty. If all remaining fields in a line are empty, the line may be terminated with `\cr` before all the field separators are used (as in (2)). Finally, in (3) the text in the fourth field is not set in italics: this is because TeX places the contents of each tab field in an implicit group, making all changes of font local. Note that TeX 'backs up' after setting each field of a tabbed line: this means that you always know which field any given text will appear in (simply count the &s), but it also means that long text in small fields can give problems: in the following construction, text from the second field will overwrite the first:

```
\settabs 10 \columns
\+ A great deal of text in a small field & This looks awful! \cr
```

Once the `\settabs` command is issued the tabs defined remain in force until another `\settabs` directive is encountered. Tabbed lines may, of course, be mixed with other text: only records preceded with `\+` have tabbing applied to them. TeX will end a paragraph if it encounters this while it is setting running text, placing the tabbed material on a new line. Like most other commands, the effect of `\settabs` can be made local by enclosing the command in a group:

```
\settabs 5 \columns
...                %% tabbed material here in 5 cols...
{
  \settabs 9 \columns
  ...              %% ...here set in 9 fields...
}
...                %% ...and back to 5
```

Do as I say

Sometimes we need more flexibility in setting tabs. Fields of different sizes are often required: in these cases the command `\settabs` can be used

with a template line, giving complete control over tab settings (Figure 2):

```
\settabs\+ \quad & Rimsky-Korsakov\quad & \cr %% template line
                                     %% from \+ to \cr
\+ & Beethoven & (\it Eroica\/) Symphony \cr
\+ & Bach & Brandenburg Concerto No. 3 \cr
\+ & Rimsky-Korsakov & \it The Golden Cockerel \cr
\+ & Brahms & Handel Variations \cr
```

You must ensure that the material in each field in the template line is at least as long as the longest text for that field, otherwise overlapping problems may occur. The material in the template line is not limited to text: in the first field of the example, a `\quad` space is specified. By leaving the first field in each tabbed line empty, the table is effectively indented by the amount of space in the corresponding template field. This can be used to specify tab positions exactly, in terms of units of dimension:

```
\settabs\+ \hskip 2cm & \hskip 5cm & \hskip 1cm & \cr
```

Here the first field is 2 centimetres wide, the second and third five and one respectively, with the fourth extending to the end of the line.

Displaying tables

Often a table needs to be set apart from the main text, in which case it usually looks best centred between the left and right margins, with space before and after. One way of achieving this is to define a first column in the `\settabs` command which will always be empty, setting the width of the column to an appropriate value. This is unlikely to produce the best results for all tabulated material, however, and there is a better way of proceeding. The material to be displayed in a table can be placed in a `\vbox` before it is set on the page: the whole structure can then be centred on the page using `\hbox` and `\hfil` as described in last month's article. Here is an example, producing a table of programming languages and their types:

```
\medskip
\hbox to \hsize{\hfil\vbox{
  \settabs\+ \bf Procedural\quad
    & \bf Object-oriented\quad
    & \bf Logic\quad & \cr
  (\bf\+ Procedural & Object-oriented & Logic & Functional \cr)
  \+ C          & Smalltalk      & Prolog      & Miranda \cr
  \+ Pascal     & Eiffel        &             & ML \cr
  \+ BASIC      &              &             & Hope \cr
  \+ COBOL \cr)\hfil}
\medskip
```

To set tabs at regular positions inside such a `\vbox`, you need to define a smaller line length. This can be done by assigning to `\hsize`: if this is done within the box, its effect is local, and any tab settings will be based on the new line length (from this point of view a box acts like a group). The table defined below is subtly different from the one above, with columns spaced regularly rather than by the lengths of the text in the fields:

```
\hbox to \hsize{\hfil\vbox{\hsize = 3.5in
```


replace individual colours, or globally alter any red, green or blue bias. A very well thought out programme that's well worth the £5.00 registration. Martyn also has another programme in the pipeline that will create colour separations with registration lines, suitable for paste-up.

The Inkmun Colour Kit comes as squeeze bottles with double refills of cyan, magenta and yellow inks, plus a cleaning solution for flushing out any remaining ink from your empty cartridges. Systems Insight are the European distributors for Inkmun inks and can also supply empty cartridges, although their prices are presumably aimed at PC and Mac users: £34.95 for the Colour Kit, and £20.00 (ouch!) for three empty cartridges. Phone (0727) 827200; Fax (0727) 827201.

And now for the plug. There'll be a hands-on review of HPChrome and the Colour Kit in the October issue of the ST Enthusiasts' Newsletter (STEN). STEN is aimed at the serious ST user, and is available free of charge to anyone who sends a blank disc and an SAE to the address given in the Authorware section. Enjoy!

John Weller

- HP Chrome is available on ST Club disk DMG.30, and the Bubblejet version is on disk DMG.32.

Q A colleague with an Apple Mac and a DeskJet 500 can print his DTP work in landscape orientation, so why cannot I do the same with Fleet Street Publisher 3 on the Atari ST?

Is there a reliable printer driver than can be installed in FSP3? If so, what is it, where do I get it and, above all, how do I install it? Help, advice and guidance will be much appreciated. On the other hand, if FSP 3 cannot be adapted, what is the best alternative DTP program which can print in landscape orientation on the DJ500 and uses outline fonts?

P L Patient

- Support for Fleet Street Publisher disappeared some time before Captain Bob did, and there is no sign of the situation improving. For landscape DTP work with outline fonts take your pick between PageStream and Calamus 1.09.

DeskJet 500C

Q I hope to change my printer for an HP DeskJet 500. Drivers are supplied with Calligrapher and Timeworks DTP but can I obtain a new driver and fonts for my default setup? Are GDOS drivers available for the colour DeskJet 500C that would enable colour output from Hyperdraw, etc., and are they available for Degas output?

T S James

- HP Chrome (see above) and PageStream are the only packages that we know of that have DJ500C drivers. The colour version of Imagecopy, due December 1992, will print Hyperdraw and Degas pictures in colour on

the DJ500C.

Falcon Feedback

I I was very impressed with the look of MultiTOS. It is What Atari need to keep the ST family going in the future. I hope that incompatibility problems are addressed. Perhaps MultiTOS should keep a file of memory-hogging files, and only give them a small amount of memory to start up. I am really impressed that it appears to be all in the 256K ROM set, apart from the utilities. Perhaps GEM has been rewritten in machine code to cut down on space?

The new Atari Falcon looks to be a great machine, but there are some problems with the specification as I see it. There is no VME bus as used on the TT and the Mega STE, surely kicking hardware suppliers in the teeth again? The screen resolution may well be up to TV standards, but PCs these days are nearly all being supplied with at least 16 colours at 800 x 600 resolution, and often support (albeit with interlace on cheaper monitors) 1024 x 768. Since Atari are finally using a VGA-type monitor system, the rapidly falling prices of multi-sync monitors make such resolutions within the price bracket of home users. I think we can afford to set aside 1Mb from 14Mb for screen memory!

I hope the Falcon shown in various magazines is just the first of a series: faster processors, bigger boxes and expansion slots, domestic electrical controllers, etc. Now with MultiTOS, all we need is a re-written X-Windows system and we can all have a workstation on our desk for sensible money.

John Watkins

I A few comments on the Falcon gleaned from German Mags.

- 1) It doesn't appear to take SIMMS but uses Atari-specific memory cards.
- 2) DDD are offering Falcons in a Mega ST case. So it looks as though if Atari don't offer the 'professional' machine, then the independents will do the market research for them. (Answer to Joe Connor's last CAD column.)
- 3) FSM GDOS is being scrapped - Speedo is the current Atari replacement
- 4) Sam Tramiel (in TOS magazine) said that Atari have written voice-mail and telefax-modem software for the Falcon, and they are thinking of bundling them with the Falcon.

Britt Johnston
Switzerland

Parlez-vous ST?

Q After reading a friend's set of back issues of ST Applications about the various inter-application protocols now around I got quite excited! "At last," I thought, "we can all talk to each other." Of course, the ST has had inter-application facilities all along with the APPL_xxxx library, but no real definition of

what to send and how. GEM TUBE seems a good protocol and apparently has the backing of ATARI, and XACC too appeared excellent in design. My memory fades but I'm sure there was a third. Suddenly my sigh of relief dies a bit as I see that there is now a handful of protocols available. Oh well, I could always program to cater for all three, maybe. But as you look around at the major packages available on the market I think I've only come across Compo software that makes any attempt to use them, and then only one - their own!

And if that wasn't enough, the superb Falcon now appears, with MultiTOS. "Great," we all shout, "real inter program communication begins!" Or does it? As we have not seen MultiTOS is proliferation yet, does it have a real standard for inter application communication? Will the three suggested protocols transport over to a MultiTOS-based ST? Will anyone bother with any of it? Does anyone care?

My encouragement and suggestion is this. It's really down to the bigger developers in the UK, Europe and USA to get their collective heads together and decide on a standard that will 'cover' all operating systems from TOS 1.00 to MultiTOS, one that everyone agrees on and starts to use. Let's face it, every one will benefit - developers and users. Applications would take on a new lease of life for the ST. And you never know, Atari may even be raised from a slumber and dare to raise an eyebrow at it. Or there again...

Tim Finch,
Degsoft Software

Maths Programs

Steve Kingdom - Forum STA 20

I There are several maths programs for the ST.

Riemann II is an algebraic program with graphical output, for calculus, linear algebra, matrices, vectors, tensors, formula modeling, etc. It comes with a lisp-like language to extend the type of problem covered. Cost, 298DM from Bergemann and Niemeyer, Goellnitzerstr. 12 D-7500 Karlsruhe (218DM for students). Tell them you're English; they have an English version of the tutorial.

Matlab is a maths extension in Modula II (published by Heim Verlag).

Means V2 is a finite elements program (HTA Software). Data fitting and presentation can be done with Data 3.1 (R. Wirth, Kasterstr. 30, D-5170 Juelich) or MM-Graph (Overcan). There are several good statistics programs available for between 100 - 900DM. And for those on a tight budget, for 15 to 40DM there are several "semi-professional" programs from Heim and Maxon on fractals, dynamics, electromagnetic fields, data analysis, and statistics.

So the ST is well supported if you know the language of Leibniz, Gauss, Euler or Goedel. For a student, this is worthwhile in itself, and will even improve your chances of getting a job. Freud learnt French by translating Mes-


```

\settabs 4 \columns
\+ C          & Smalltalk      & Prolog      & Miranda \cr
\+ Pascal     & Eiffel         &              & ML \cr
\+ BASIC      &                &              & Hope \cr
\+ COBOL \cr \hfil

```

Align at a time

Having to calculate tab positions in advance, whether by working out a suitable template line or by providing explicit measurements, can be a pain. Moreover, when building a table it could be that you want to define the table as a whole in terms of its width, rather than having to be concerned about the width of individual columns. TeX provides a horizontal alignment primitive `\halign` which extends the concept of a template line. Compare this version of a previous example with the original:

```

\halign{\quad * \hfil & \quad * \hfil \cr
  Beethoven & \it Eroica Symphony \cr
  Bach & Brandenburg Concerto No. 3 \cr
  Rimsky-Korsakov & \it The Golden Cockerel \cr
  Brahms & Handel Variations \cr}

```

The template line this time contains no text (although it could - see below). Instead, place-markers for each column entry are provided (the hash-symbol '*'), along with material essential for spacing the entries in each column. TeX reads the whole table into its internal memory: column widths are calculated automatically before the table is set. The fact that material in the template line is set along with the data in the table lines gives much more flexibility (note here that we do not need an 'empty' first column in each table line, as in the original example).

For each table line, TeX combines the contents of each field with the corresponding template text, then places the constructed field in an `\hbox`. It is therefore possible to specify fonts (for example) in the template line, if each entry in a particular column needs to be set in a distinctive font. In addition, if there is text common to all the fields in one column, it too may be placed in the template to save typing: it will be set into the actual table along with glue and any other commands you have placed there. Because fields end up as `\hboxes`, placing `\hfil` glue in each template field is advisable. This consumes slack space in the narrower entries: without it, TeX will produce numerous "Underfull `\hbox`" messages. This glue could appear before the text place-marker: if the previous example's template was specified like this:

```

\halign{\hfil * & \quad * \hfil \cr
  Beethoven & \it Eroica Symphony \cr
  ...
}

```

then the first column's text would be right-justified in its column, not left-justified. I'll pause for a moment while you work out how to centre text in a table column... ..got it? Just specify `\hfil` glue in the template on each side of the '*' character!

Building up tables

Columns of text are all well and good, but for maximum effect material to be presented in a table benefits from being 'boxed', with rules separating the lines and columns. By combining `\vrule` and `\hrule` with the `\halign` construct, we can build impressive-looking tables with very little extra effort.

Horizontal rules across the table are simple to engineer. Within an `\halign` block, material may be entered using the command `\noalign`. This has the effect of temporarily suspending the alignment template, and inserts the immediately following material into the table on a line of its own:

```

\halign{
  ...
  \noalign{\hrule}           %% makes a horizontal line
  ...
}

```

Because an `\halign` block ends up as a box, the `\hrule` will extend to cover the width of the table.

Vertical rules are a little more complex. The simplest way to put them in place is in the template line, but one or two things need to be fixed before this will produce a satisfactory result. Firstly, TeX's line-setting algorithms can result in unequal line spacing. Ordinarily, the visual effect of this is correct (interline glue will expand evenly across a paragraph or page), but in a table we could end up with gaps between the vertical rules. To prevent TeX inserting variable glue between lines, the command `\offinterlineskip` is used. Secondly, we must make sure that each line in the table is the same height. The command `\strut` sets, in effect, an invisible character whose height and depth are guaranteed to match those of the largest characters in the current font. By placing one of these in the template line, each line will be exactly the right height. With `\vrules` in the template as well, we arrive at an initial attempt at a table:

```

%% Simple table displaying keyboard state values
%% returned from GEM function graf_mkstate()
%% (underscores need to be escaped (\_))
\offinterlineskip\tr
\halign{\vrule*&\strut\quad *\hfil&\vrule*
      &\quad *\hfil&\vrule*\cr
\noalign{\hrule}
& K\_RSHIFT      && 0x0001 & \cr\noalign{\hrule}
& K\_LSHIFT      && 0x0002 & \cr\noalign{\hrule}
& K\_CTRL        && 0x0004 & \cr\noalign{\hrule}
& K\_ALT         && 0x0008 & \cr\noalign{\hrule}
})

```

If you generate and view this (see Figure 3), you will find all the text set as required, with horizontal rules above, between and below the table entries. However, the rules are too close to the text: to space the horizontal lines from the material they enclose we need to specify lines of a required height (which nevertheless contain the vertical table rules). This is by passing a `height` value into one of the fields which contain `\vrules`, and by preventing TeX from setting the field with the `\strut` by using the command `\omit`, which replaces the template for the current table field with a nominal '*'. If the table you are building is at all large, it is good practice to place these commands in macros: if you decide to change an aspect of the table it makes it easier if this information is in one place, and it also makes the source easier to type and understand.

```

%% The same table, using macros and adding space between
%% the horizontal rules and text
\offinterlineskip
\def\tr{\noalign{\hrule}}           %% table rule
\def\ts{height 2pt &\omit*\omit*\cr} %% table space
\tr
\halign{\vrule*&\strut\quad *\hfil&\vrule*
      &\quad *\hfil&\vrule*\cr
\tr\ts
& K\_RSHIFT      && 0x0001 & \cr\ts\tr\ts
& K\_LSHIFT      && 0x0002 & \cr\ts\tr\ts
& K\_CTRL        && 0x0004 & \cr\ts\tr\ts
& K\_ALT         && 0x0008 & \cr\ts\tr\ts}

```

Any size you like

Boxed tables such as the one developed above look better if the title is incorporated into the table itself. As this will need a line to itself (without the dividing vertical rule separating the two columns in our keyboard state example), TeX provides a command `\multispan` to be used in align blocks when material needs to spread across columns (one could achieve the same effect with `\noalign`, but `\multispan` is more general, and can be used to combine groups of adjacent columns at will). The following line will produce a title centred in a box of its own which extends across the top of the table:

```

&\strut\multispan3\hfil Keyboard state values\hfil&\cr

```

Points to note: (1) the vertical rules in the first and last template fields appear courtesy of the initial and final ampersand characters; (2) the `\multispan` command takes a numeric parameter indicating the number of columns to be combined, in this case three (the two text fields plus the vertical rule which comes between them); (3) `\multispan` overrides any template text for the fields it replaces: to ensure that the

title line is as high as the other table lines, a `\strut` is explicitly included.

As the central vertical rule is excluded from the title, we cannot use the `\ts` macro defined in the full table source to insert the desired two points of space above and below the title. To be able to do this a separate macro needs to be defined (here called `\tst` - table skip title), identical to the first save for the use of `\omit` to suppress the middle rule:

```
\def\tst{height2pt&\omit&\omit&\omit&\cr}
```

One final refinement available from `\halign` is the ability to specify the width of the table directly, using the syntax `\halign to <dimension>`. TeX places a unit of glue called `\tabskip` between the columns of a table. Ordinarily, this is set to `Opt`, which means it does not stretch or shrink at all. In order to specify a table which may be set at different sizes, `\tabskip` must be assigned a glue value which will stretch and shrink sufficiently:

```
\tabskip = Opt plus2em minus2em
```

The **plus** and **minus** components of this assignment define the basic amount by which this glue will stretch and shrink respectively. You will almost certainly wish to place this assignment in a group (preventing it from interfering from other tables in your document), and if the table in question is not boxed with vertical and horizontal rules, all will be well. However, if you are using rules, the flexible table glue will cause the edges of the box to come adrift from the main body of the table! The solution is to place `\tabskip` assignments within the template line itself, after the initial vertical rule (making the glue flexible) and before the final one (rendering it unstretchable again). Here is the final form of our table source, embodying all these enhancements and demonstrating many of TeX's capabilities: the dimension parameter following `\halign` can be set to any desired value and the table will still be set correctly. The output for this table is given in Figure 4:

```
%% Final definition of table, incorporating a title and
%% the ability to define different table widths
%%
\offinterlineskip
\tabskip=Opt                %% freeze table glue
\def\tr{\noalign{\hrule}}    %% table rule
\def\ts{height 2pt &\omit&\omit&\cr}  %% table space
\def\tst{height 2pt &\omit&\omit&\omit&\cr} %% space (title)
\att                          %% set in typewriter
                             %% template turns on/off
                             %% stretch in table glue
\halign to 6cm{\vrule*\tabskip=0em plus2em minus2em
```

Column 1	No. 2	III
<i>first</i>	this text starts in column 2	

Figure 1. Tabs set in columns

Beethoven	<i>Eroica</i> Symphony
Bach	Brandenburg Concerto No. 3
Rimsky-Korsakov	<i>The Golden Cockerel</i>
Brahms	Handel Variations

Figure 2. Using a template line

```
&\strut\quad *\hfil&\vrule*\quad *\hfil
&\vrule*\tabskip=Opt\cr
%% title across 3 columns, using
%% alternate spacing macro
```

```
\tr\tst
&\multispan3\strut\hfil Keyboard state values\hfil&\cr\tst\tr\ts
%% the body of the table
& K\_RSHIFT      && 0x0001 &\cr\ts\tr\ts
& K\_LSHIFT      && 0x0002 &\cr\ts\tr\ts
& K\_CTRL        && 0x0004 &\cr\ts\tr\ts
& K\_ALT         && 0x0008 &\cr\ts\tr\ts
```

The road to TeX mastery

If you have worked through the examples in this series, you should now be in a position to do most of what you want in TeX. As you use TeX, though, you will certainly come across things you would like in a document but which don't seem to have obvious solutions (particularly when you start looking at books with a typesetter's eye: reproducing the layout of another document is a good way of developing skills, both TeXnical and typographical). The one essential book on TeX is Knuth's own *TeXBook*, published by Addison-Wesley (available in hardback and as a ring-bound softback, price about £26.00 for the latter. Regard the cost as a small price to pay for being able to run one of the world's great works of software on your ST!). As Knuth says in the preface, "everything you need to know about TeX is explained in here somewhere". There are many examples and exercises in its 500-odd pages (with solutions provided for all of these as well), and sections aimed at more experienced users are annotated with 'dangerous bend' signs, making it is possible to use the book as an introductory manual (skip the difficult bits) as well as a guide to the deeper mysteries of TeX. The fact that it is beautifully written and amusingly illustrated is a distinct bonus!

Two books aimed more directly at the newcomer are *TeX for the Impatient* by Paul Abrahams, which is set out in a way which makes it easier to find information on individual control sequences and macros, and the *Introduction to TeX* by Norbert Schwarz, highly regarded in its original German edition. These too are published by Addison-Wesley.

It remains only for me to wish you well in your adventures with TeX. Good luck! It is a large product: after the initial culture-shock of (effectively) having to program your documents, you will find yourself rapidly assimilating the parts of the language that you use most frequently. It is worth the initial effort: whatever their scale, the rewards of seeing your own works elegantly typeset are considerable.

four!

fourth

K_RSHIFT	0x0001
K_LSHIFT	0x0002
K_CTRL	0x0004
K_ALT	0x0008

Figure 3. Boxing a table

Keyboard state values	
K_RSHIFT	0x0001
K_LSHIFT	0x0002
K_CTRL	0x0004
K_ALT	0x0008

Figure 4. The final version

Advanced ST System Programming

Andy Pennell presents the first in a new series of articles for the experienced programmer.

Part 1

Writing Legal Programs

Introduction

This is the first in a series of articles on programming the ST range; they are not intended for the beginner but are directed at the more experienced programmer who has a reasonable understanding of the operating system and who places reliable and flexible code at a high priority level. The programs and program segments themselves are not particularly advanced; however it is my intention to show certain techniques which many programmers may not be familiar with and to try and impart useful information to a wider audience.

By way of an introduction, I have been programming the ST since its existence, starting around August 1985, using a combination of languages and tools, themselves evolving during the last four years. I wrote HiSoft DevpacST 1 & 2 and co-wrote the HiSoft BASIC range. My latest program is a source level debugger which I hope to release as shareware.

Programming Languages

I've programmed extensively in C, assembler and BASIC, but for the duration of this series I will be using HiSoft BASIC for most of the examples, as BASIC is readable to practically all programmers, whether they like it or not. If I had chosen C or assembly-language it would have immediately alienated a vast proportion of non-C or assembler-fluent readers, whereas any programmer should be able to adapt the BASIC listings to the language of their choice. A couple of examples will be in C or assembly-language out of necessity, when attempting to use another language would be difficult at best and only help to greatly confuse the issue. The programs are written in version 1 of HiSoft BASIC so should work fine with Power BASIC and, maybe, FirST BASIC

(the latter's reduced libraries might be a problem though).

A great advantage of using HiSoft BASIC is that all system calls, AES, VDI and BIOS, use the standard C names, so are easily converted to other languages and implementations. For the subtle differences, see the box "VDI Programming with Basic".

What is a Legal Program?

A legal program is one designed to work in all ST screen modes, with any ROM-based version of TOS, with any memory configuration and with any processor. This is certainly not true of many commercial programs, and not even of all of my own I must admit, but I think it is very important to write programs given these specifications. As I hope I shall show, writing completely legal programs is no harder than writing illegal hacks, and much more useful. A legal, nice program is one that can recognise a configuration that it cannot cope with and say so, exiting neatly, instead of carrying on until the inevitable bombs.

Why Bother?

If you are writing programs solely for yourself, you may well ask why bother? Your program may work fine on your TOS 1.0, colour-screen 512k machine, so why should you care whether it follows the rules or not? Suppose your machine breaks down - your replacement machine may well have a different version of the ROMs in it; you may upgrade to a monochrome monitor; you may get some more memory? When writing commercial programs these considerations are of the utmost importance, but they should also be considered when writing solely for yourself. A good reason for doing so is public domain software - you may be pleased enough with your

attempts to make your program PD, so others may use it, but PD programs are notorious for breaking on newer versions of the ROMs or new machines, for example - don't let it happen to you.

Machine Configurations

There are various things which can change a machine's configuration and potentially break programs. In fact if you work it out the number of possibilities is virtually endless, when everything is taken into account, though not half as bad as those in the PC-Compatible market. Software authors for the Macintosh found this out to their cost many years ago, because they had assumed a floppy-based, monochrome, 512k RAM machine, when all of a sudden there were hard disks, large screens, colour, 68030s and new versions of the Apple System. A vast number of programs broke horribly, but they have learnt their lesson - very few Mac programs do anything remotely naughty now, because of the wide variety of machines, a useful change of direction for those of us using Macintosh emulators, such as the one I am typing on now! In order of importance, the main configuration factors affecting Atari programmers follow:

Screen Resolution

Most ordinary users only have one or two screen modes available to them for testing purposes; either high res, or medium and low resolution, owing to the simple fact of financial necessity - who can afford two monitors? However, even if you cannot test your programs on other modes, you can attempt to program defensively, to increase the chance that your program works on other modes. There are various reasons for programs failing in different modes, and I don't just mean the three normal ones - large screens are gaining popularity; there are various overscan hardware modifications that give a larger monochrome

picture; and there are the three new screen modes of the TT. It is possible to write complex software that works in all modes, it just takes a little care. A summary of some modes is shown below:

Mode	X	Y
Low	320	200
Medium	640	200
High	640	400
TT Low	320	480
TT Medium	640	480
TT High	1280	960
Large screen	varies	varies

Few programs can afford not to care anything about their screen mode; text-based programs, such as compilers and other CLI-based programs, are really the only type that don't mind; almost any other program really needs to know something about its screen environment, if only its pixel size. The way it finds the information out depends whether it is a TOS or GEM program, denoted by its file extension.

A GEM program can find its screen size on return from its Open Virtual Workstation call, or subsequently by using `vq_extnd`. It can find the number of bit-planes from `vq_extnd`. A TOS program can find the same information from the line-A variable area. There is only one way of finding out the address of the memory used by a screen - from the Log-base XBIOS call. (See Listing One.)

Something that can greatly help screen resolution independence are resource files - if designed correctly one file can work in all current and future screen modes. Even if a program has two resource files, one for colour and one for monochrome, there are still ways of ensuring the best chance of compatibility with future modes.

If you are writing a program which desperately needs a particular screen mode, or for that matter cannot work in a particular mode, think again - why? If you need 16 colours, don't just use

Listing 1.1

```

' find out about screen characteristics
DEFINT a-z
LIBRARY "gemvdi","xbios"
DIM info(56)
vq_extnd 0,info()
s_width=info(0)+1
s_height=info(1)+1
max_palette=info(39)
vq_extnd 1,info()
s_planes=info(4)
s_addr&=FNLogbase&

PRINT "Size :";s_width;"x";s_height
PRINT "Planes :";s_planes
PRINT "Palette:";max_palette
PRINT "Address: ";HEX$(s_addr&)

```

getRez to see if the screen mode is 0 - check the number of bit planes, you might be a TT. If your menus and resources are too large for a 40-column screen, don't just check explicitly for low-resolution - calculate the character width.

I will return in more detail to the subjects of compatible resources and legal screen accessing in later articles.

ROMs

It is difficult to write ordinary programs that rely on particular ROM versions, though many people do manage it. Although I don't think there is anyone, thank goodness, who JMPs directly into ROM code, there are some who use undefined system variables to achieve various naughty ends. An undefined system variable is one whose address is greater than \$600 or so, whose address is guaranteed to change between ROM revisions and break programs that rely on it. If you are writing a nasty program that really needs to do this sort of thing, at least check the ROM version and date to make sure it is one you know about. An example of a program which didn't do this was the ICD real-time clock program, which died horribly on TOS 1.4, for example (though it has since been corrected).

RAM

The original ST hardware restricted maximum RAM to 4 megabytes, and a change in RAM (upwards at least) seldom breaks programs. What often breaks them is that some programs accidentally write past the end of screen memory, which has no harmful affects on smaller machines, but on Mega 4s and 4160STEs will produce a bus error if you write more than 768 bytes past the end of the screen. On the TT the problem is worse as bus

errors will occur as soon as RAM runs out, not at the 4M boundary.

System Extensions

A system extension is something that patches a system vector or two to add a certain effect (or alter an existing one) to a piece of the operating system. The most popular system extension that used to break programs (including some of my earlier attempts) is Atari's own GDOS, but it wasn't their fault. This broke any program which didn't open its virtual workstation properly, using a valid handle, as it made much more extensive checks than does the ordinary code. For reference the correct way to open virtual workstations is shown in listing 1.4.

If a program breaks with a system extension installed it is normally, though not always, the fault of the extension itself. The most common reason is registers being corrupted when they are not by the normal operating system call. For example, a patch I wrote stole the GEMDOS Trap #1 vector, but broke when GDOS was used. The problem was nothing to do with handles or anything, it was that GDOS itself relied on register A0 not being corrupted by a Trap #1; sadly my patch code did corrupt it, which crashed GDOS. Other examples of system extensions that can cause problems are extended File Selectors (I am guilty of that too) and VDI patches, like TurboST.

We'll that's it for this month; not much programming but quite a bit of theory. Putting it into practice starts next month. I'll leave you with a challenge: the first person that points out a possible or actual incompatibility of any of my code in this series with any particular configuration will win fame and fortune. (I lie of course - a little fame only and maybe a beer at a show.)

VDI Programming with BASIC

The HiSoft/Power BASIC listings in this and other articles should be easily converted to other languages that support the VDI calls, with the following caveats:

The DEFINT A-Z always used at the start defines all variables, by default, to be 16-bit integers. If an ampersand (&) is used after a variable or function name then it denotes 32-bit integers.

The DIM SHARED command declares variables as global to all sub-programs and functions.

Functions returning values will be prefixed by FN.

No handle parameter is passed to BASIC's VDI calls; a virtual workstation is always opened during program initialisation and its handle will be used, unless another is required. The default virtual workstation will automatically be closed on program termination.

BASIC programs automatically perform appl_init and appl_exit calls and VDI initialisation and cleanup. Listing 1.4 shows these steps in C which can be used as a wrapper for converting any of AES or VDI BASIC programs

C programmers should remember that BASIC DIM statements specify the last dimension of the array, not its total size, so 1 should be added to the index of any converted C declarations.

All variables and functions are either 16-bit or 32-bit integers, making conversion to assembly language easier as well as keeping the programs as efficient as possible. The \ operator is BASIC's syntax for integer division.

My BASIC style is to upper-case all reserved words and sub-program names, and leave everything else in lower-case. I will deliberately try not to use any of BASIC's built-in functions to increase portability.

Listing 1.4

```

/* simple AES/VDI 'wrapper' for C programmers */
#include <aes.h>
#include <vdi.h>

short handle;
void gem_main(void);
int main(int argc, char *argv)
{
    short work_in[11], work_out[57];
    int i;
    short junk;

    appl_init();
    for (i=0; i<=9; i++)
        work_in[i] = 1;
    work_in[10] = 2;
    handle = graf_handle(&junk,&junk,&junk,&junk);
    v_opnwk(work_in, &handle, work_out);
    if (handle)
    {
        gem_main();
        v_clswk(handle);
    }
    appl_exit();
    return 0;
}

/* your code goes in here */
void gem_main(void)
{
}

```


Technical History of TOS

In The Beginning

In the early days there was disk-loaded TOS; that's when 512k machines cost around £700, back in 1985. The best thing that could be said about the disk loaded version is that it worked, sort-of. Fortunately, it rapidly became obsolete with the introduction of the first ROM release.

The first ROM version became known as the 20th November 1985 edition, the date it was released (you can tell this by looking in the ROM header). The French and German releases were a few months behind the US/UK releases but the exact differences have never been documented by Atari.

In order to support the now infamous blitter chip, Atari had to change TOS again, which they did in April 87 with the release of the so-called Blitter ROMs. Apart from the actual blitter support it had a classic GEM bug corrected, namely the underline-in-the-File-Selector bug, and improved floppy handling by formatting skewed disks, so they worked much more quickly. It had other new features but Atari didn't bother to tell anyone until about a year later, when the first beta-test release of 1.4 appeared. There were some new bugs, including the AES wind_get call to find the menu buffer size.

Rainbow TOS

Two years later version 1.4 of TOS was finalised, having been available to beta-testers for about a year in various disk loaded forms. A considerable amount of work went into this version, much more so than any previous update, and it showed.

The disk-handling areas of GEMDOS had a massive overhaul resulting in a huge performance improvement, particularly noticeable for hard disk users, and a few improvements were made to the

AES (e.g. the improved file selector). Users with a few megabytes of RAM benefitted from a new 'fast load' bit in program headers which sped up program loading by not zeroing unnecessary areas of RAM when launching a program.

TOS 1.4 is also known as Rainbow TOS, due to the multi-coloured Atari logo that can be found on the About dialog box in the Desktop. No disk-loaded beta-test 1.4 did this, only the final ROM release, hence the confusion of certain magazine writers. TOS 1.6 also has this multi-coloured effect, though 3.0x doesn't perform the effect in any TT screen mode.

TOS 1.6

With the release of the STE, Atari decided to change the ROMs yet again, but in a more drastic way than ever before - they moved them. In order to introduce compatibility with the higher 680x0 processors, Atari had to abandon their mis-use of Line-F opcodes which they had previously used in the AES and VDI to minimise code size. In 1.6 these were all replaced with direct JSRs, making the ROMs noticeably bigger and GEM marginally faster. The disadvantage was that the ROMs got too big for their 192k maximum, so they were moved, from \$FC0000 to \$E00000, and expanded to 256k. In fact the hardware supports up to 512k of ROM space, a feature required for TOS 3.0. Apart from the line-F changes, the only alterations were support for the 68010 (which you can plug directly into an STE). As far as I can tell the few additional operating system support routines for the new STE hardware were already present in TOS 1.4; the extended palette and new code regarding the monochrome-detect signal. The moving of the ROM address is responsible for more programs breaking than any other change; the only normal reason for accessing the ROM directly

is to investigate the ROM header, which should always be done via the system variable _sysbase. However, many programs assumed \$FC0000, which will generate a bus error if you try to read it on an STE or TT. I have to confess at this point that the HiSoft MonST2 debugger, which I wrote, was one such program which broke on an STE, but it could not use the system variable for technical reasons I won't bore you with. Newer versions of MonST use location 4 to find the ROM, by the way.

The only really useful new feature of 1.6 was the Cookie Jar, a

handy system information list. The original TOS 1.6 shipped with the embarrassing DESKTOP.INF bug that prevented users from booting in medium resolution, which was hastily fixed in 1.62.

TOS 3.0x

When the first TTs shipped they included TOS 3.01. TOS was extended to cope with the new hardware (SCSI, TT RAM, clock chip) and the new screen modes. A few areas actually used 68030 instructions, but mainly to handle the processor's cache. Together with the all-new and improved

Listing 1.3

```
/* print various OS version numbers from C */
#include <stdio.h>
#include <stdlib.h>
#include <osbind.h>

/* compile into a .PRG; needs GEM library */

/* this works on Lattice C 5.0 */
#if LATTICE_50
#include <aes.h>
#define AP_VERSION _AESglobal[0]
#endif

/* this works on Aztec C */
#if MCH_ATARI
#define AP_VERSION global[0]
extern global[];
#endif

typedef struct {
    short bra;
    short version;
    long reset, base, endram, res, gem, date;
    short osbits;
    long dosdate;
} rom;

rom *super_sysbase(void)
{
    return (rom*) * ( (long *) 0x4f2 );
}

char *hstr(short x)
{
    static char buf[6];
    sprintf(buf, "%4X", x);
    buf[5]=0; buf[4]=buf[3];
    buf[3]=buf[2]; buf[2]=buf[1];
    return buf[0]!=' '? buf : &buf[1];
}

int main(int argc, char *argv)
{
    static char dbuf[9];
    rom *sysbase;

    sysbase=(rom*) Supexec(&super_sysbase);
    printf("ROM Version: %s\n", hstr(sysbase->version));
    sprintf(dbuf, "%08lx", sysbase->date);
    printf("ROM Date : %2.2s-%2.2s-%4s\n", &dbuf[2],
                                           &dbuf[0], &dbuf[4]);

    printf("DOS Version: %d\n", Sversion()>8);

    appl_init();
    printf("AES Version: %s\n", hstr(AP_VERSION));
    evt_keybd();
    appl_exit();
    return 0;
}
```

Name	Date	ROM	DOS	AES	A.K.A.
Old ROMs	20 Nov 85	1.00	19	1.2	
Blitter ROMs	22 Apr 87	1.02	19	1.2	1.9
Rainbow TOS	6 Apr 89	1.04	21	1.4	
STE TOS	? June 89	1.06	21	1.4	
TT TOS	9 Aug 90	3.01	25	3.0	
Mega STE TOS	?	2.01	?	?	
3.06	24 Sept 91	3.06	32	3.2	
2.06	?	2.06	?	?	

Desktop this pushed the ROMs up to 512k in size.

A few users got some intermediate versions but the next major release was 3.06 which offers several minor improvements, the most important being high density floppy support (1.4M floppies) and blit code improvements. It fixed some VDI bugs in 3.01 (e.g. drawing wide lines always works instead of filling the screen with garbage) but has at least one new one (the new blitting code fails under some conditions).

TOS 2.0x

After the TT came the Mega STE, complete with TOS versions 2.0x. They are strongly related to their 3.0x brethren, but without the TT additions (68030 instructions, screen mode and new hardware), but including the new desktop and HD floppy support (in 2.06).

Version Numbers

The version numbers of the different ROM releases originally followed a sensible path, from 1.0 through to 1.06, in steps of .02, before they jumped to 3.0x then back to 2.0x. However, many magazines and (as a result, many users) insist on using fic-

titious version numbers, the most common being TOS 1.9 or 1.09, for the blitter ROMs. The real TOS version number can be found in the TOS header, the DOS version comes from the Sversion GEMDOS call and the AES version can be found in the global array. For historic reasons the zero after the . is normally ignored when discussing version numbers (e.g. 1.04 is called 1.4), just to further confuse the issue!

Finding Your Version Numbers

The only guaranteed way to find the ROM version is to look into the ROM, either directly with a debugger or indirectly via a program. A less fool-proof way is to click on About Desktop from the Desktop itself, and look at the copyright dates. Take the last year listed and look it up in the Date table above.

Listing 1.2 shows how to do find all the version information in HiSoft BASIC; Listing 1.3 shows the same in C. Owing to the non-trivial differences in accessing memory directly in the two languages, I've shown both. In order to obtain the AES version you need to be able to get to the AES global array; this will

Listing 1.2

```
' Show various OS version numbers from BASIC
DEFINT a-z
LIBRARY "gemdos", "gemaes"

' ROM version needs supervisor long peek
sysbase%=PEEK(&h4f2&)
SHOW "ROM Version: ", PEEKW(sysbase%+2)
d$=HEX$(PEEKL(sysbase%+24))
If LEN(d$)<8 THEN d$=STRING$(8-LEN(d$), "0")+d$
PRINT "ROM Date : ";MID$(d$,3,2);"-";MID$(d$,1,2);"-";MID$(d$,5,4)

' DOS version is easy
PRINT "DOS Version: ";FNsversion

' AES version needs AES pointer array; *very* compiler specific
global%=PEEKL(gb+4)
SHOW "AES Version: ", PEEKW(global%)

SUB SHOW(mes$, num)
LOCAL a$
a$=HEX$(num AND &hFF)
If LEN(a$)<2 THEN a$=STRING$(2-LEN(a$), "0")+a$
PRINT USING "&#.\\":mes$, INT(num/256), a$
END SUB
```

depend on the individual compiler. If it isn't documented for yours, have a look at the code for appl_init with a low-level debugger. When it gets around to a TRAP #2, the second long pointed to by register D1 will be the address - see if it has a symbol

associated with it. If you can't find it, just skip the AES version number code. The most complicated parts of both programs is not finding the version numbers themselves, but in decoding them into a human-readable form.

- ☐ Ignore current file name conflicts: UIS III can be forced to ignore any file name conflicts during copying or moving files
- ☐ Three different window layouts with two font sizes; movable UIS III window
- ☐ Instant free RAM report at any time
- ☐ New Quickpath feature: up to ten file paths may be stored and recalled on a function key or with a couple of mouse-clicks; filename may be used as filemask
- ☐ Full or partial directory printout with option to set form feed and left indent
- ☐ file show and print: control codes converted to spaces for easy viewing of WP files

Universal Item Selector III

New Features for UIS III

- ☐ Built-in Default Configuration Ability
- ☐ New Lasso Functions: bi-directional lasso with automatic window scrolling
- ☐ New Multiple File selections: left click with shift key or left click with right button depressed
- ☐ UNDO function: file operations may be aborted by pressing the Undo key
- ☐ Re-set or cold boot from the keyboard
- ☐ change file attributes: Read/write, Read only, Show, Hide & Touch

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Jeremiah's Journal



Splinterbone

For the second month running, Ocean pick up an accolade from Jeremiah, and the latest antics from the French leave him gobsmacked with admiration.

Hook

I took my children to see Walt Disney's animated film version of "Peter Pan" during the summer. J.M. Barrie's classic tale of the boy who never grew up has long been one of my favourite fantasies. It always seemed to me to possess an irresistible combination of wonderful ingredients for the lover of adventure - Indians, pirates, magic, a wonderful heroine, a dastardly villain and a dashing hero with the ability to fly! Over the years I've seen the story told not only as a film but also as a book, a pantomime and an extravaganza on ice - funnily enough though, I've never seen it in the medium for which it was written, that is to say, as a play - and, whatever the style of the presentation, it has never failed to enthrall me with its innocence and wonder. Therefore, the trip to the cinema this summer was as much an excuse for me to over-indulge myself, as it was meant to be a treat for the kids.

Now, after all these years, there's a new film version of "Peter Pan" on release. Only this time, it's called "Hook", features real actors rather than animated characters, and - horror of horrors - Peter Pan has grown up! I haven't seen this movie yet but, as it's directed by the immensely talented Steven Spielberg, a man who has managed to retain a fair amount of his own boyhood despite growing up, I have high hopes that it might measure up to its more illustrious predecessor. With that in mind, I approached the Ocean adventure game "Hook", which is based on the movie, with equally great expectations.

This new Peter Pan story starts with the most unlikely premise. Namely, that Peter has finally grown up, now calls himself Peter Banning, lives in America, works as a lawyer, has children of his own, and has long ago forgotten that he was ever Peter Pan! Unfortunately (or fortunately, since otherwise there would be no story), Captain James Hook has not forgotten his arch enemy. He misses Pan terribly. Life is so dull with no Peter to cross wits with, and he

longs for a final confrontation which will prove for once and for all who is the better man! Accordingly, he sets out to tempt Peter back to NeverNeverLand, so that their battle can take place, using the expedient means of kidnapping his children and holding them captive aboard his ship. Imagine Hook's rage and disappointment when the person who turns up to claim his offspring turns out to be a slightly balding, slightly paunchy, respectable lawyer with no memory of how to fight, how to crow, or how to fly! Desperately seeking to salvage something from this mess, Hook gives Peter three days to get himself back into his old mercurial shape, ready for the ultimate war, otherwise his children will die!

It's just about around this stage that the game actually starts. You take control of Peter in the moments following his arrival in NeverNeverLand. Your first task is to acquire a pirate uniform so that you can get on board Hook's ship and be given your three day ultimatum by your old adversary himself. After that, it's off to find the Lost Boys and a race against time to restore all your old skills and memories in order to rescue your children before the deadline arrives.

The game is presented as an animated graphic adventure, very much in the "Monkey Island/Lucasfilm" style. The locations and characters are depicted in a brightly coloured cartoon style. The game is controlled through the use of a mouse and a set of five icons. The icons represent the actions LOOK, TALK TO, PICK UP, USE and GIVE TO. Clicking on the relevant icon and then on the appropriate object, character or location on screen will result in the action being carried out. If you ask Peter to perform a task that he cannot do, he just stands there and sadly shakes his head before allowing you to try another command. When selecting the TALK TO icon, you will be presented with a list of possible things that Peter might say to the person he is addressing. You can scroll through this list by clicking the right mouse button, and select the one to be used by clicking the left mouse button. That's about all

there is really to the game system. Apart from to say that it works very well, is relatively simple to use, and could well rival the Lucas-film system (provided sufficient additional titles are produced with it to allow some refining and smoothing of the rough edges to take place).

The game itself is not very complex. The story is told in a fairly linear fashion, but the problems are usually simple - a little exploration and experimentation being all that is usually needed to deduce or discover the solution to any particular problem. However, it is also quite a small game, despite the fact that it occupies four disks' worth of space, and will probably not take the experienced adventurer very long to complete. I enjoyed it greatly, finding it a very easy and relaxing game to play, and a lot of fun besides! This makes for two interesting and worthwhile games coming out of the Ocean stable in as many months (PUSH OVER being the other). One can only hope that the trend will continue.

Gobliins

The only reason I can think of for there being three "I's" in the title of this game is that it features the adventures of three goblins, and therefore there's one "I" for each goblin. Apart from that, it could be just some kind of Gallic logic which I just can't comprehend. Yes, this is another of those quirky French games which it is just impossible to put into any particular category, but which turn out to be peculiarly addictive just the same.

Basically, the King of the Goblins has been incapacitated by an attack of malevolent magic. You take control of three goblins as they embark on a journey to seek a cure for their ailing monarch. This journey will take them across a number of beautiful screens drawn in a humorous cartoon style. Each screen contains a number of tasks to be completed and problems to be solved before the party can progress on to the next screen. Loca-

tions vary greatly between the inside and outside of a wizard's house, underground tunnels, open fields and caves. In order to overcome the difficulties obstructing the successful completion of their mission, each of the three goblins is gifted with some special talents.

The **WARRIOR** is the strongman of the party. He can strike objects or characters with powerful blows and accomplish difficult feats through brute strength alone. He also has the ability to climb up items like ropes and creepers in order to reach otherwise inaccessible areas of the screen. The **WIZARD** is (surprisingly!) the magic user in the group. He can cast spells on objects which will change them into other items that will be useful to the group. Unfortunately, there is no way of knowing what the effect of a spell will be until it is actually cast, and the effects of the spell will vary depending on location and circumstances. The final member of the trio is the **TECHNICIAN**, so-called because of his ability to pick up and manipulate any objects that he finds. It is through the use of these objects that most of the problems in the game will be overcome.

You can switch control between the goblins by simply clicking on them with the left mouse button. Clicking the right button changes the mouse pointer into different shapes which

represent the **USE**, **DO**, **PICK UP**, etc options for the selected goblin. Goblins are moved around a screen by just clicking on the place you wish them to move to. Obviously, most screens will only be solved by using the talents of each goblin in conjunction with the talents of the others - although working out how exactly to do that will not be easy. Each completed screen produces an access code which allows you to restart the game at the beginning of the next screen. One final complication is added by the fact that your goblins have a limited amount of energy available to them, and any incorrect actions on their part will usually lead to a reduction in the energy level. Should the energy level reach zero, your goblins will die.

As previously indicated, the graphics are extremely well implemented and contain all kinds of small and amusing touches. The goblins come across as individual characters also. If you take too long deciding on your next move, they will take yo-yos out of their pockets and start playing with them, or they'll whistle aimlessly and tap their foot as they wait for you. If you make a correct move and solve a part of the overall puzzle, they let out whoops of delight and throw themselves into exuberant backward somersaults to celebrate your success. Conversely, if you happen to make the wrong move, the goblin effected lets out a shriek of horror while the other two

sadly shake their heads at your obvious foolishness.

I'm not really sure how to sum up *Gobliins*. It has obviously been at least partly influenced by *LEMMINGS*, but is totally different from that game. Is it an adventure? Is it a strategy game? Is it a puzzler? Well, it possesses aspects of each of these genres but doesn't fit comfortably into any of them. It's altogether a unique piece of software which is a pure delight to play and can be incredibly difficult to solve. Give yourself a treat this Christmas and acquire a copy.

Product:Hook

Published by:Ocean Software

Price: £25.99

Product:Gobliins

Published by:Coktel Vision

Price: £25.99

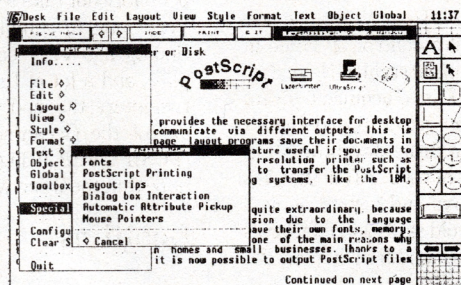
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User Guide

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At last: a users' manual written from a user's perspective. The author, David Smith, a dedicated user of this versatile package, has learned through experience, and trial and error, how to produce remarkably professional results. This book aims to pass this knowledge on by introducing the basics in such a way that each new feature builds on what has gone before, to form a kind of "learning curve".

The book is full of innovative ideas to produce newsletters, C.V.'s, posters, reports, theses or indeed a professional book (as the guide itself demonstrates). Each feature is explained in easy-to-follow, step-by-step instructions that every novice will appreciate.

Topics covered include: the installation process, setting up a document, importing text and graphics files, special effects, and an extensive section on installing and designing fonts - to make your work really stand out from the crowd. There are numerous worked and visual examples throughout the text.

Going On-Line

V Numbers

The new, fast modems hitting the UK from America, such as the Supra and Twincom FAXmodems offer great value for money and are proving to be very tempting. But do their specifications leave you gasping?

SupraFAXmodem V.32bis, V.32, V.22bis, V.22, V.21, MNP 2-5, V.42, V.42bis

The V series numbers are the responsibility of the CCITT - Comité Consultatif International Télégraphique et Téléphonique (International Consultative Committee for Telegraph and Telephone) which is an international standards body based in Geneva working in the area of data communications.

V.21

A standard for 300 bits per second duplex (both directions simultaneously) data transfer rate. It is now only included for downwards compatibility as very few users operate at this speed any more.

V.22

A standard for 600 and 1200 bits per second modems. Very common and the absolute minimum speed of a modem that any user should consider.

V.22bis

In France, a house built between number 7 and 8 would be called 7bis whereas we would call it 7a. In this case, 'bis' is used to mean 'something similar'. V.22bis is a standard for 2400 bits per second duplex modems which are now considered to be the base models in the new modem market.

V.23

A 600/1200 bps down-link or forward channel and 75 bps up-link or back channel asymmetric protocol not used in the US and now becoming uncommon elsewhere. It was initially used for Viewdata services like Prestel, where a fast (in the early 1980s) transfer rate was required to receive the large amounts of data in a Viewdata page but where data being sent back from the terminals was very small, generally consisting of a few key presses. For the latter, 75 bps was adequate and the modems where cheaper to make than full 1200 bps duplex ones. However, as

such services became more interactive, uploading files at 75 bps was too slow and costly and by this time cheaper V.22bis modems were appearing.

V.24

The standard designating the details of the interface between a modem and a computer. It is essentially equivalent to the RS-232C port specification.

V.32

This is the full duplex 9600 bps standard that was established in 1984. Such a high speed requires a technique called 'echo cancellation' where a modem can filter its own tones from the telephone line enabling it to lock onto the signals from the other modem. However, this requires a built-in digital signal processor (DSP) chip, the main reason for their expense. V.32 also includes a fallback to 7200 and 4800, that is, if line noise becomes a problem at 9600 bps then both modems will negotiate to use the lower rate. The V.32 standard also provides an optional error-reduction technique, called Trellis-Coded Modulation (TCM) resulting in fewer errors on noisy lines. V.42 generally makes this redundant.

V.32bis

It was first realized in 1989 that it was possible to push V.32 up to 14400 bps. This requires even better echo cancellation and an overall improvement in receiver quality making it more costly to produce. The CCITT recognized the standard in 1991. Again, there is a fallback capability to 12000 bps in the event of a poor line and to lower V standards accordingly. Do check that any new modem also has a fall forward facility to increase its speed if the line quality improves during a transmission. It has to be said that data transfers at this rate require a very clean line and a compatible modem at the other end. It is well known that one make of V.32bis modem will

not necessarily always generate and sustain a good connection with another of a different make. This is especially true when connecting some of the new, cheap modems to Miracom HST devices which are very common on BBS and CIX lines.

MNP 1-4

The Microcom Networking Protocol (MNP) enables error-free asynchronous data transmission. MNP is a proprietary protocol but became the de facto standard in the 1980s. Each successive level of the MNP standard also resulted in a slightly better throughput of data.

MNP 5

This standard incorporates the first four levels and also employs a data compression algorithm. It can compress data by up to a factor of 2 to 1, allowing data to be sent at twice the modem's top transmission speed (e.g. a 2400 modem could send an amount of data equal to an uncompressed 4800 bps).

V.42

The V.42 standard is not concerned with a modem's speed but with error correction and data compression. Previously, there were two different schemes, MNP and the preferred method, LAPM (Link Access Procedure for Modems). The V.42 standard is involved with error correction, the CCITT having chosen the LAPM method with support for MNP 1-4. A modem with only MNP is called 'V.42 Compatible' and one with LAPM is known as 'V.42 Compliant'. If a V.42 compliant modem connected to a V.42 compatible, it would first try to handshake with LAPM and when unsuccessful, it would try the MNP method.

Most V.32 modems are fully V.42 compliant, but they do not have to be according to CCITT guidelines. So when purchasing a V.32 modem make sure that it is also fully V.42 compliant, not just V.42 compatible.

The V.42 standard also allows for LAPM data compression as an option but this is more usually covered by the V.42bis standard.

V.42bis

V.42bis is a CCITT standard for data compression techniques which was approved in 1989. A V.42bis modem must support both LAPM and MNP 5 data compression methods. V.42 provides a maximum data compression of 4:1 giving a 9600 bps modem a theoretical throughput of up to 38400 bps and a 14400 V.32bis modem a throughput of 57600 bps. MNP 5 only offers 2:1 compression but is included to be compatible with non-compliant modems.

Such data compression rates only apply to raw textual data and not to already compressed files, such as LZH, ZIP and off-line reader files. The use of MNP 5 in these situations slows down data transmission as it tries, unsuccessfully, to compress them further. It is necessary to switch it on and off when required. V.42bis has a facility to determine if the transferred data can be compressed further or not before making an attempt to do so. Therefore, V.42bis will not slow down a ZIP file transfer and may even speed it up a little bit.

There are some 2400 bps modems which are also V.42bis compliant advertised as having "9600 throughput" using LAPM's data compression rate of 4 to 1. This is confusing and misleading. I have yet to meet anyone who has achieved such figures so don't be fooled by these throughput claims. All data compression rates and the resulting 'data transfer rates' are obtained only under optimum conditions and at best, theoretical only. The raw speed is what matters when transferring compressed files and the price difference between some 2400 bps V.42bis modems and true 9600 or 14000 bps modems is such that it will be paid back in saved phone costs very quickly.

STICKS AND STONES

A search-and-destroy mission to combat his ever-growing desk chaos leads Günter Minnerup into uncharacteristically self-critical thoughts about software reviewers this month.

Computers may not be very clever, but they are certainly neat. By contrast, I quite like to think of myself as reasonably intelligent but I am far from tidy. From what I have seen of other computer users' desks, it may well be the case that messy people are particularly attracted to the merciless discipline of binary logic, hoping perhaps that some of it might rub off on their own chaotic habits. Its inability to understand more than "current on" or "current off" may not get my ST any closer to Mensa membership than the average toaster, but its ability to keep track of millions of memory locations underneath a heap of papers held together by dust, grime, tobacco stains and coffee spills is truly awe-inspiring. If only, for example, the trim fastidiousness of the on-screen disk directories could somehow survive onto my floppy disk labels! But no, disks are lucky to carry any label at all, and even luckier if the label bears any significant resemblance to the contents. Disk boxes are overflowing to the point where the lids will no longer shut, with any urgently required one usually hidden under a beer mat or between the pages of a three-weeks-old Guardian. Every now and then, therefore, it becomes quite imperative to declare war on the chaos and make some effort to tidy up the disk collection.

Doing just that the other week, it suddenly occurred to me just how much precious disk box space was being taken up by software which I am never likely to use again in earnest. Years of software reviewing have made me the proud owner of just about every significant ST program ever published in my particular fields of interest. If most of these were reformatted, I would probably never have to buy another 3.5 inch disk again. So I neatly stacked up wordprocessors (everything except Calligrapher), databases, desktop publishers, graphics programs, comms software and so on to decide what was expendable and what was not. And then - ever ready to find the slightest excuse to abandon a disagreeable chore - I started to think...

Why exactly, I asked myself, did these programs not remain on my hard disk for long

after the usual test period during the preparation of a review? What exactly distinguished the ones that made it to permanent fixture status from the ones discarded and forgotten? What, in a nutshell, is good software? Reviewers need to make this judgement all the time in a pragmatic, piecemeal fashion, but rarely if ever stop to think about the underlying criteria informing their judgements. Above all, since most reviews are written under pressure of deadlines and after only a limited period of acquaintance with the software, their authors tend to be overimpressed by the features count: look what this thing can do, and compare its features with those of rival packages. By the time the novelty wears off and the latest SuperMegaHyperHack Professional has been returned to sub-perspex oblivion, the review has been written and printed. For the poor punters who actually pay for their software, this separation of the wheat from the chaff comes too late: their hard-earned cash has already been exchanged for a bug-riddled dinosaur with a uniquely unpleasant user interface.

Features are important, of course. If nothing else will do the job, then constant crashes and idiosyncratic command structures will have to be put up with until something more solid and elegant comes along - which, given the current pace of innovative software development in the Atari market, may not be for quite a while. Thousands of ST users have courageously fought VIP Professional for years just because there was no other Lotus-compatible spreadsheet with similar capabilities. But features are only really important if you actually need them: if all your wordprocessing consists of correspondence, you do not require footnotes and indexing, and few desktop publishers I know have any real use for four-colour CMYK separations. So why risk sending your data into reset button nirvana every ten minutes when a less powerful program will do what you want more reliably?

Another criterion overrated by reviewers, in my view, is adherence to a standard GEM interface. The ST certainly has its share of monstrous rogues, some of which - such as Megapaint Professional - I have found

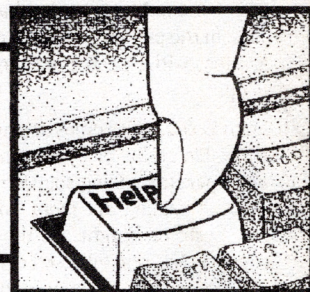
utterly unusable in the long run despite otherwise impressive capabilities, but on the whole I rather like the creative diversity of ST software when compared to the boring sameness of Macintosh applications. Most of us only use a small number of major programs regularly, after all, and will soon come to grips with their little eccentricities. My favoured textcruncher, Protex, is about as far from a standard GEM application as ST Applications is from Personal Computer World, but it makes up for this through speed, versatility and reliability. Why slow things down for the sake of Digital Research dogma?

Reviewers, I believe, have subtly different interests from "real" users. They are always after the latest, exciting new features which most people will rarely, if ever require. They are highly opinionated on issues such as consistent user interface design when most people simply want to get on with the job. They are not, on the other hand, terribly interested in documentation, which is in any case often not ready when they are asked to review a package by software houses anxious to rush into sales and editors hungry for "exclusives". They cannot possibly take long-term reliability into account when judging a package after a few days' acquaintance. And they have little idea of what sort of after-sales support the end user can expect: reviewers, after all, tend to be treated generously by publicity-conscious software publishers who provide little more than an answerphone for their ordinary customers.

I must admit that, looking at discarded program disks with a view to reformatting them, I came across quite a few items which I myself had waxed fairly lyrical about when I first reviewed them. It was done in good faith at the time, as the drawbacks only really became apparent to me later on, when I was looking at the very same packages with different eyes: those of an actual user rather than a reviewer. Now then, on behalf of all those readers unwittingly misled by me into buying a duff program, here is my belated revenge: 80 tracks, 9 sectors per track - go!

Günter Minnerup

FORUM



The Forum pages are a regular feature of ST Applications, enabling readers to exchange ideas and help each other out with problems. Whilst we attempt to briefly answer questions here, if you have additional information or ideas please do submit them for publication. What you consider to be trivial information can often be of considerable use to other readers!

Please send your letters on disk if possible. Disks will be returned with a PD of the writer's choice. Longer submissions may appear as articles, in which case you will receive payment at our standard page-rate.

You can now post messages for inclusion in the Forum via the CIX bulletin board on 081-390-1244. All messages posted onto our stapplications conference on CIX are considered to be for publication. Private mail can be sent to us with mail to paglo, but do not expect an instant reply! Messages reprinted in the magazine Forum pages are identified by the CIX stapplications conference message number after the author's name.

CIX is a commercial system with a £15 joining fee and on-line charges of between £2 and £3.10 per hour. For more details see the introduction to CIX in issue 3 of ST Applications.

Key:

The following codes are used for each Forum entry:

J Pringle - Forum 29: Author who first raised the subject, and in which issue. In this case 29 refers to the Forum pages in Issue 29 of The ST Club Newsletter.

Q Question

A Answer

I General information or 'Input', advice, discussion, hints and tips, etc., with or without reference to previous Forum pieces.

• Editorial reply

Sticking Hard Drive

A I was fascinated to read about the problems both Ewan Haggarty and Keith Berry had with Power Computing's series 900 hard disk drives. A friend of mine had the same problem with the same hardware.

Intermittently the drive (a Sony) had failed to boot up. Sam opened up the case, closed it again and it had started working. Finally it failed to respond to this treatment and he brought it to me for testing.

ICD's IDCHECK program confirmed it was recognized on the SCSI bus but no other utility saw it. After removing the bare drive from its case and twisting it about in one hand whilst it was powered up, I noted the absence of the gyroscope effect (a resistance to change of angle). If you don't know what I mean - then maybe, when you were younger, you spun a bicycle wheel (minus bicycle) holding it by the spindle....? If you feel no resistance when twisting the drive about, then it isn't spinning. Noise from the fan may mask the sound of the drive turning.

Taking the usual precautions against static electricity, I removed the screws retaining the circuit board, turned the motor by hand and applied a puff of WD40 towards the motor bearing. It turned when reassembled and powered up. I ran it for several hours with the drive sitting on either long edge as well as with PCB facing down (the normal orientation). Never thump a hard disk! Also, most drives should not be used with the circuit board facing upwards. If your drive sticks, try Ewan Haggarty's method first (STA 23).

If you are building or adding to a hard drive system, the terminating resistors for the SCSI bus cable are crucial. These must be present at both ends of the cable and nowhere else. This normally means on the controller and on the bare drive. Any extra SCSI devices between the controller and far end of the cable must have their terminating resistors removed. Seagate drives should have parity disabled by removing the jumper nearest to the 50-way cable.

I had identical trouble (worn or faulty motor bearings) with another Sony device, a C20 Betamax video recorder. This mangled tapes

when ejecting cassettes. An official mod kit didn't entirely kill the problem. Perhaps Sony might care to comment...

Dave Henniker

Cover Disk Software

I Full price applications software on cover disks? A closer look at these will show that this is by no means the case. Quite apart from the crucial absence of a manual, these are usually (perhaps always?) early versions which would not be what one would get for the full price. I suppose it would be naive to expect much more but I don't see why the real facts should not be made part of the advertising hype.

The recent First Word Plus give away is an illustration of this attitude. I don't complain in the least about the value of what I got for my money, as it enabled me to see what I had been missing while happily plugging along on the old bundled V1.06! However, on starting to read the magazine, I find they make no secret of the fact that what they describe as "worth £80" is actually V2.0 which was superseded in December 1988 and we are invited to spend another £30 on the current version. Incidentally, I have now done this, so there is obviously some percentage in their approach!

Finally all the illustrations to the tutorial article appear to refer to the full version. The only other gift horse I have fallen for was Harlekin which also proved to be an earlier version. So once again - no grouses about the actual value of the 'gift' but a bit more candour would be appreciated.

J A Higham

DeskJet Matters

I Has anyone else used Martyn Dryden's excellent HPChrome shareware utility with the Inkman Colour Kit? HP Chrome allows you to print colour pictures from a DeskJet by creating cyan, magenta, yellow and black separations and then prompting you to change cartridges and refeed the sheet for each colour. The print quality is very good, and the programme allows you to lay the picture exactly where you want it on the sheet (landscape or portrait), resize or crop it, adjust/

mer on hypnotism. Perhaps working through a German handbook is today's way to start.

I While having reservations about such terms as "ultimate", applied to Mathematica or any other system, I think I should point out that a main-stream algebra system has been available on the ST for many years, to wit REDUCE. It has been sold since the early 1980s; admittedly most users have been in Germany, but the latest version REDUCE 3.4.1 is certainly available in the UK in both Cambridge LISP and Codemist Standard LISP forms, and is now available in a full "Professional" version with all sources and the new "Personal" version, which is the same code but without the development environment and sources.

REDUCE may not satisfy Mr Kingdom, but it can certainly do calculus, imaginary numbers, numerical calculations and matrices, as well as more advanced mathematics such as exterior calculus and Grobner bases. Its graphics are not good at present. If Mr Kingdom, or any other reader, would like to contact me I can direct him to the source.

Prof J P Fitch

School of Mathematical Sciences
University of Bath

ReNameIt

Q Something weird happens when I use ReNameIt - the neat accessory for changing filenames from your PD Disk DMG.31. It works a treat - but not in two partitions (F and G) of my hard drive. Instead, clicking on 'Do' produces two bombs (three when I tried a folder name) and a freeze-up. Other partitions are fine.

I've tried moving the programs/folders I'd like to rename into other partitions and everything works then. But when I move them back into F or G, having renamed them elsewhere, they revert to their old boring caps. Various basic disk check programs all say the partitions are fine and no different from the others. I've tried disabling all accessories and Auto programs and ensuring the program icon is not also on the desktop (I've got TOS 2.06), in case that confuses matters. No effect. Anyone got any ideas?

Jane Firbank

Laser Printers

I The new Ricoh LP1200 laser printer, as advertised by Silica for £699 plus VAT, appears to be very attractive. I very nearly purchased one, but after researching the market decided against it. My experiences may be of benefit to others.

Ricoh have a reputation for producing quality products that are very popular in Japan and the price offered by Cambridge Business Software was very attractive. However, there are problems:

None of the major suppliers of consumables

currently supports the LP1200. (I contacted Inmac, Action, and Misco.) The problems that can be caused by this were well documented by Günter Minnerup in STA 7.

The only source for spare parts and consumables would be Silica. I have been told that Ricoh spares are both expensive and difficult to obtain. (An experience that will be familiar to owners of some Japanese cars.)

I contacted Silica to enquire about the printer, in particular the availability of consumables and extending the maintenance contract after the first year. Their attitude on the consumables was 'we stock them - what is the problem?'. The figure they quoted for maintenance was about three times that for other similar printers. The person I spoke to was uncertain about the price, so this may not in fact be the case.

Since I was unable to get clear information from Silica, I contacted Ricoh direct. They were even more useless than Silica. This level of pre-sales support made me doubt their level of post-sales support.

So in the end I purchased an Oki OL410 LED printer with a 1M byte memory upgrade, a comparable machine, for the same price as the LP1200 from Silica. This was more than the price of the LP1200 from Cambridge Business Software. I was sorry not to buy from Cambridge Business Software - a very helpful organisation - but I think that the OL410 is a better buy. I believe that an LED printer with its simpler design may be more reliable than a laser printer.

Regarding consumables, the Ricoh toner is more expensive than the OKI, but the drum is much cheaper. The OKI drum is rated for 12,000 copies (24 reams of paper). I suspect that the printer will be obsolete before a new drum is needed on most home computer systems.

Metafile Fonts

Q I have a problem with GDOS fonts, specifically metafile fonts. My GDOS system consists of assign.sys files, for Calligrapher, Timeworks DTP v2, Degas Elite and a 'Default' setup for Hyperdraw, LDW Power, etc. These are switched in as required by G-PLUS+, with the associated fonts stored in separate folders. I have a wide variety of fonts that could be used but all these lack the metafile equivalents, which means that without the metafonts I can't save as a *.gem file, limiting me to the fonts supplied with Hyperdraw and LDW. Are there more GDOS fonts available in 'sp' and 'mf' forms, or is there a conversion program that will convert my existing fonts to the 'mf' form?

T S James

● Fontkit Plus 4 (£24.95) will generate metafile (.mf) files for GDOS printer fonts.

Bad News Dept.

I The Bath BBS closed from midnight on

September 30th.

StarBase One

Q There is a typo on page 37 of STA 22 as the phone number for Starbase One 071 773 3992 is unobtainable.

Kelvin, CIX #373

A Yes, that must have been a typo. There are two numbers for Starbase One: 071 733 3992 - main line, all speeds, and 071 738 7225 - special high-speed (2400 and above) line for subscribers only (£12 including a decent manual and well worth it).

It really is an excellent board - not just for amateur astronomers, although it serves us brilliantly. It is also part of Fidonet, so you can communicate with ST users the world over.

Incidentally, sysop Nick Stevens is on CIX as Starbase1 (I think - that's from memory).

P Sutherland, CIX #377

Image Editing

Q I have a Zydec handy scanner, which works very well, but the Daatascan editing software provided with it is abysmal. With hindsight, I wish I had paid a few pounds extra and bought Gasteiner's Golden Image scanner, which has Touch-Up bundled with it.

I have an early 1040STF (TOS 1.0), upgraded to 2.5M memory, with a mono monitor and hard disk. I use Calligrapher Professional and a DeskJet 500 to produce instructional manuals, which often require line illustrations of reasonable quality. I therefore scan at 300 dpi, which usually produces files much larger than screen size.

I have not seen any advertisements or reviews for software able to edit larger-than-screen size IMG files other than Retouche (which is really too expensive and elaborate for my needs), and the German PD program Butterfly Artist (which happily loads IMG files and provides all the editing facilities I need, but fails to re-save properly any file larger than screen size).

Can you suggest any other program I might use?

Lawrie Purkess

● Hyperpaint 2 from Atari is probably the most cost-effective solution: it has all of the standard editing functions but lacks the scanner-friendly tidying up facilities of Touch Up. It would be worth checking with Gasteiner to see if they now sell Touch Up on its own. The only other alternative readily available in the UK is MegaPaint, available from Silica Shop.

Touch Up

I Having recently added to my system the Data Pulse Plus 105mb ICD Hard Drive, I was eager to take advantage of the increased flexibility of using the Touchup V1.65 and Out-

print software supplied with the Golden Image hand scanner, in particular getting rid of the bug which always failed to recognise the existence of Outprint.Prg from within Touchup.Prg. The error message 'Outprint not found. Insert disc with Outprint.prg in drive A' appeared even if Outprint.Prg was inserted into drive A, which meant having to quit the Touchup program and run Outprint independently.

Thinking this may have some relationship with Hard Drive paging, I thought this problem would be solved when the program was installed exactly as stated in the manual for Hard drives. Unfortunately, the same problem occurred, with the same error message. With the aid of a disk editor I discovered that Touchup.Prg actually looks for a program called Output.App when shelling out to Outprint. I renamed Outprint.Prg to Output.App and everything now works perfectly. I can now move freely between the two programs without any problems. This also works with floppy based systems.

A J Beards

Mega STE

I My new Mega is still not able to read some games discs so this must be a feature of the new TOS. It will read the discs if an older version of TOS is loaded from disc though.

Tim Bicknell

Q I have a Mega STE (TOS 2) but notice that your PD catalogue does not as yet indicate which PD disks are TOS 2 compatible. As I understand it, anything written originally with STOS - and STOS itself - will not be TOS 2 runnable even if it was developed on the most up-to-date STOS software. For all I know this might be true of other PD code which is nonetheless TOS 1.04+ OK. So I would be reluctant to go for PD until some indication of TOS 2 status were known, or is it just "hope for the best" if TOS 1.6 is OK?

A F Mallett

● We have not tested the PD collection for compatibility with TOS 2 and TOS 3 simply because the number of people using these machines is so very low. We will add incompatibility notes to any software found to be TOS 2+ incompatible; and if you discover any such items we will exchange the disk. As Mandarin/Euopress Software have repeatedly issued versions of STOS that do not run on the most recent TOS versions we have stopped accepting PD and shareware submissions written in STOS.

We shall be checking the PD library for Falcon compatibility and the next catalogue will include Falcon compatibility notes.

Q I have a Mega STE (TOS 2.06). Some programs, mainly games, corrupt the screen which makes them unusable. I can live without the games but it also happens with the comms programs Vanterm (3.8) and FDT (2.1 demo).

Other programs include Timeworks (v1.12) which did this once while printing, and Write On. Is this just an incompatibility problem or is my computer faulty?

Once the screen has been corrupted a keyboard reset (warm or cold) will not clear it as even the Atari logo on the bootup screen is distorted. It seems the only way to clear the memory is to leave it turned off for at least a minute, sometimes longer. The CPU speed does not seem to be causing any of these problems as it is the same at 8 or 16Mhz.

The reason some games do not run on the Mega STE seems to be because the disc drive is not able to read the discs. While my STFM will show the directory with auto folder and files etc. the Mega will report "Data on the disc in drive A may be damaged". This applies to both the internal 1.44Mb and external 720K drives. Again, is this normal or is mine faulty?

My system is 2Mb with 48Mb Power Computing hard disc and colour Philips monitor and 720K B drive.

Tim Bicknell

● Sounds like a hardware fault: there should be no problems with programs such as Timeworks on a Mega STE. Try running a memory checking program for a few hours to see if there are any intermittent memory faults.

DeskJet Paper

Andrew South - Forum STA 21

A In response to Andrew South's enquiry about paper suitable for use with the DeskJet, I recently bought a pack of 500 90 gm A4 sheets of "Plus Laserjet" by Wiggins Teape for £3.95 plus VAT from a local branch of Osborne's Stationers. The wrapper is marked "Guaranteed for Inkjet Printing" and is labelled with an arrow to show the right side, as mentioned in the DeskJet manual, though I have noticed no difference myself in the quality from either side.

It is a very white paper, and it seems to give a sharper image than most paper that I've tried on my DeskJet but a pack of County photocopy paper bought from a car boot sale (whence most of my paper stock has been bought) is my favourite to date.

Keith Berry

Noisy Fans

Q I've had a standard 40mm Maplin fan fitted to my Mega 1 to keep its internal organs cool and functioning correctly after a memory upgrade, but it seems so noisy in contrast to the Atari's silent operation prior to its installation. Does anyone know of a 'whisper quiet' fan I could replace it with?

My Data Pulse hard drive also gets quite hot after several hours' use and although Ladbroke insist it doesn't need one, I'd like to fit a fan anyway, but I couldn't stand two of these Maplin turbo-props going at once - I'd go deaf. Any suggestions?

The RS Components catalogue lists an Etri low noise 40mm fan (stock #506-176) which I might try but, at £15 each, they would be an expensive gamble.

Martin Norfolk

Memory Allocation

A Mouse Tricks 2's memory limiting feature should conveniently solve MultiTOS's problem of an application grabbing too much memory - it's useful on current TOS versions for leaving memory for accessories such as Read Text or Imagecopy. Individual applications can be each allowed a suitable amount of memory: a few hundred Kbytes for a certain word processor, or a couple of Mbytes for a DTP package. Feedback from users of the beta version of MultiTOS would be welcome.

Jonathan Lawrence

Professional Systems

I At work - I earn a living programming mini-computers and PCs - I have a 33MHz 80486DX computer with a super-VGA colour monitor running MS-DOS V5.0 and Windows V3.1 on my desk. At home I have a 4MByte STFM with a monochrome monitor running Neodesk, Calligrapher and Notator. Of the two systems I much prefer to work on the ST. (The only area where the ST is lacking is that Superbase Professional is put to shame by Paradox.) The reason for this preference is certainly not speed, which seems to be the only computer parameter that matters these days. The ST is simply a nicer machine to use. Neodesk and Calligrapher especially seem to provide all the features I require without going overboard on 'specmanship'.

Monitor Matters

I From time to time questions appear in the ST magazines about connecting a TV to the ST through the SCART. The pin connections are well publicised, but never have I seen the SCART Function Switching implemented.

If SCART pin 8 (Function) is connected to the Atari monitor pin 8 (12 Volt pullup) the computer will switch the TV into Monitor Mode whenever the ST is switched on. The Function Switch is designed so that a Video Recorder can automatically control the TV, but the ST can do it too.

My second ST sits in the dining room next to the small TV. The children use them as they please. When they turn on the ST the TV automatically switches from whatever channel it was on, and displays an E for external. Couldn't be easier.

Sometimes I use this setup for wordprocessing rather than the STe and mono monitor in the office. The colour display is, of course, not as clear as the monochrome, but is much improved by using a utility to switch to 60 Hz scanning. I use TOGGLE_HZ from the Microcare Utilities. I run it from my Protext Exfile,

having renamed it HZ.PRG. I can type HZ in the CLI anytime to switch modes, but the program can simply be run from the Auto-folder.

Brian Elliott

Sea Software

Q As a professional seafarer I find myself dismayed at the dearth of navigation and ship related software available for the ST. At present I am forced into using a PC contemptible for most of my work, so if anyone out there knows differently please get in touch.

I use PC Navigator (an American program), Voyplan 5, and Shipload (by R.W. Purser). Even the Psion LZ64 has Sightmaster II, Tides, and Ship Stability available!!

W T Lawrie

SM144 Discontinued?

I We buy many Mega STes for work and use them extensively for DTP with Calamus. The SM144 monitor is no longer available and we can only get the SM124. Atari say there are no shipments due. I have a requirement to buy three more machines but will not go ahead until the SM144 situation is sorted out. Should I now go for PC!? Thought you would like to know.

G Tricker

Swapping Drives

Q Because of a disability, I find it rather difficult to use the ST's internal drive and before it stopped working, was lucky enough to own an STFM whereby both drives "A" and "B" could be run externally thanks to a link on the motherboard. I now have another (single sided) STFM but without this handy link.

Unfortunately connecting the "drive 0 select line" from pin 10 of the internal 34 way ribbon cable to pin 5 of the 14 pin external drive socket doesn't do the trick. Somehow, somewhere on the motherboard, the 2 drive select lines are tied together.

I would greatly appreciate knowing if on a motherboard type CO 70523 Revision D there is a track, resistor or inductor that if cut will then let me connect my 2 external drives through the drive socket on the rear of the ST.

Dennis Kretschmar
Geraldton, Australia.

Type Art

Q Please help me! I'm desperately searching for a piece of ST software called "Type Art". I want to buy it, but I cannot find it in any advertisement or shop. In spite of many researches, I didn't find any help. I've got a Demo of it and it works quite stunningly. Much better than Genus, and maybe even Didot Line Art too!

Franco Turra

Migraph?

Cut Sheet Feeder

Douglas Orchard - Forum STA 22

A I agree with the second point in the above letter. I too have become interested in computing only quite recently and would appreciate articles in the magazine aimed at beginners and in developing stages. This type of instruction seems to be spread quite widely in the commercial publications and thus becomes expensive and discontinuous.

PS It would be useful to be able to obtain a full 'A to Z of the ST' without needing to buy all back copies containing separate parts.

M Shram

● We are working on a 300+ page book version of the *Atari A to Z* and it will be available at the end of this year. Extensively expanded by Mark Baines, it promises to become the standard reference on the Atari ST, TT and Falcon computers.

Q Is COMAL available for the STe?

Raymond Gilbert

Publisher2 and Line_arc

Q The two applications I use most on my ST are Calligrapher and Timeworks, and until recently they co-existed happily on my hard disk using G+Plus to handle their differing font assignments and outputting to my DeskJet via their respective GDOS printer drivers. Since upgrading to Timeworks 2 an obscure glitch has appeared: Timeworks documents of more than one page print out with all the frames on page 2 and subsequent filled up solidly with black ink! Printing from page 1 to 1, and then page 2 to 2, etc avoids the problem but is unworkably slow and tedious.

After some experimentation I've discovered that the incompatibility is between Timeworks 2 and the Line-Arc program which Calligrapher uses for font scaling. If Line-Arc.Prg comes after GDOS / G+Plus in the Auto folder then Calligrapher works as it should but Timeworks exhibits the above fault; if the sequence is reversed then Timeworks is OK but Calligrapher is unable to print vector fonts.

Has anyone else experienced this and managed to find a fix? (Other than renaming Line-Arc.Prg each time they run Timeworks.)

Jim Cruise

Mortimer

Andrew Smith - Forum STA 18

A I regularly use Mortimer Plus, the updated version of Mortimer, so I may be able to throw some light on Andrew Smith's problem with compatibility. I cannot report on Lattice C but I have recently acquired Hi-Soft Basic which fell off the front of ST Review in August.

Two or three times I have been dumped back on to the desktop without any warning or even a bomb or two; this has only occurred after compiling and I have not found it enough of a nuisance to deter me from using Mortimer. As a Windows user I have become accustomed to this kind of behaviour and have learnt to save before doing something potentially risky - in the case of Windows printing can fall into this category.

For the most part I find Mortimer indispensable; it provides most of the facilities offered by Harlekin, with the notable exception of the scrapbook, at less cost both in money and memory, and has a few tricks of its own. It can be called up from any programme, not just those with a menu, and even, with some limitations, from within dialogue boxes! The text editor can handle four documents at once in ASCII or hex and the dynamically expanding ramdisk beats any fixed size ramdisk into a cocked hat for convenience. Unlike your reviewer in STA 11 I have no difficulty in getting it to change size though it won't expand beyond the previously set reserve if you are running a programme that grabs all the memory available. Thus if I use UNLZH to de-archive a file from a DMG disk to the ramdisk I have to make sure there is sufficient memory reserved to accommodate the unpacked files.

For the most part Mortimer is friendly to other programmes. It chugs along under First Word Plus and KSpread3 without problems, spooling print output, speeding up the mouse, etc. It survives with That's Write, once you have turned off the desktop clock to stop fragments of time being printed across the page, although That's Write ignores the printer buffer and Mortimer's keyboard configuration. This however seems fairly usual behaviour for That's Write which has its own idiosyncratic way of doing things.

STOS will not run with Mortimer, and some sequencers don't seem to like it either, but I have used it with many other programmes without trouble.

However, from time to time it does crash; usually it locks up; sometimes two or more bombs appear; sometimes it resets, at others it merely returns to the desktop. It usually happens when there has been a lot of ramdisk activity and I suspect that Mortimer cannot keep up with the memory management associated with the expanding ramdisk.

James.Acc (on DMG.29) has a vector control function which looks for illicit changes which might indicate virus activity. This facility works overtime with Mortimer which suggests something untoward or may be the inevitable consequence of the expansion and contraction of the ramdisk.

Perhaps Omikron can tell us what's going on. Mortimer is an excellent utility and deserves to be better known; the manual, however, is appalling and Kuma and Omikron do not seem to be able to agree who is responsible for rewriting it.

Alan Kennedy

DESKTOP DISCUSSIONS

Silicon Gladiators

In Core War, battle programs fight to the death for control of a computer's memory. William Hern reports from the front line.

My computer has recently become a war zone. Rival programs stalk its memory, attempting to kill each other by firing barrages of numeric bombs or steamrolling their way through. The more sophisticated ones also have defensive strategies for eluding their opponents or repairing any damage inflicted on them. No, my ST hasn't rebelled against me - I'm running Core War, a computer game like no other. Developed by A.K. Dewdney (writer of Scientific American's old Computer Recreations column) and David Jones, it basically is gladiatorial combat between two programs. The arena for the fight is a small circular piece of memory, usually eight thousand addresses. The sole aim of each program is to destroy the other program by corrupting its instructions. A program loses when an illegal instruction is executed within it. Every battle is given a time limit - if both programs are still active after a certain number of instruction executions then the match is declared a draw.

Core War combat programs are written in a special low level language called Redcode which closely resembles assembler (Figure 1). Three addressing modes are provided: immediate (indicated by the # character),

direct (default) and indirect (@). For example, suppose we have a move instruction at address Y which writes into the address ten up from the instruction (address X). The instruction MOV #0 10 would write the value zero into X, MOV -1 10 would put the contents of the address preceeding Y into X and MOV @4 10 would put the data found relative to the contents of the fourth address up from Y into X.

Overseeing the programs is MARS (Memory Array Redcode Simulator) which acts as a simple multitasking process scheduler, alternately executing an instruction from each program. In addition it keeps track of which program 'owns' each address of memory and detects when a program has been killed.

Although Redcode is very simple, the range of tactics that battle programs can adopt in order to destroy their opponents is vast. The simplest Redcode program is Imp which has just one instruction (Figure 2). It copies the contents of relative address 0 (namely MOV 0 1) into relative address 1, the next address to be executed. Hence Imp moves slowly up memory, one address at a time, leaving a trail of MOV 0 1 instructions.

At first glance Imp may seem to be unstoppable and that if the rival program does not get to it first, Imp will eventually overrun it. However there are programs which can survive Imp's relentless attack. One such program is Raider which places 'pickets' both above and below its program code and that act as alarm trip wires.

```
MOV 0 1
```

Figure 2: Imp

```
DAT      -1
ADD #5   -1
MOV #0   @-2
JMP -2
```

Figure 3: Dwarf

Instr	Arguments	Explanation
DAT	B	Nonexecutable statement. B is the data value.
MOV	A B	Move contents of address A to address B.
ADD	A B	Add contents of address A to address B.
SUB	A B	Subtract contents of address A to address B.
JMP	A	Transfer control to address A.
JMZ	A B	Transfer control to address A if contents of address B is zero.
JMN	A B	Transfer control to address A if contents of address B is not zero.
DJN	A B	Subtract 1 from contents of address B and transfer control to address A if contents of address B is not zero.
CMP	A B	Compare contents of addresses A and B; if they are equal, skip the next instruction.
SPL	A	Split execution into next instruction and the instruction at A.

Figure 1: The Redcode instruction set

Periodically it checks each of the pickets to see if an imp program has attacked them. If a picket has been altered, then Raider deftly relocates itself to beyond the attacked picket, repairs the damaged picket and sets up a new picket on the other side. By executing this sideways shuffle, Raider can elude any attack by Imp.

While Imp relies on the steamroller approach to defeat the opposition, Dwarf (Figure 3) goes for the artillery option and bombards every fifth address with zeroes. Dwarf is very dangerous to immobile battle programs because any program that has more than four instructions will sooner or later take a hit. There are three methods of defence: to get Dwarf first, to repair hits from Dwarf as they occur or to move about and elude the shots.

During my research for this column, I used Stephen Tavenor's excellent version of Core War which was written for the ST using STOS (ST Club disk GAM.148). Running unfortunately only in low resolution, it includes a simple text editor for writing battle programs and a Redcode compiler as well as the actual MARS system. During each conflict, the memory zone is displayed graphically so that the progress of each program can easily be seen. A varied range of

battle programs are included on the disk to help get novice Redcode programmers started.

Core War was unveiled in 1984 and since then programmers in many countries have been beavering away to come up with ever better battle programs. There is an international society dedicated to the subject and an ongoing tournament where newcomers may be tried against the current top twenty programs. Although the Redcode language may seem limited, the range of tactics that may be adopted for offence and defence are incredibly wide.

The bottom line is that Core War is great fun. Sending your own program into battle is a real emotional roller coaster - the feeling of exhilaration when it wins is matched only by the despair experienced on defeat. In addition to its entertainment value, Core War has educational merit. Due to Redcode's similarity to assembler, it is a good introduction to low level programming.

Those wanting to learn more about Core War should read A.K. Dewdney's own book "The Armchair Universe: An Exploration of Computer Worlds" (published by W.H. Freeman). For anyone fancying some unusual programming or an interesting challenge, Core War is a must.

Programmers' Forum

In this month's issue, ST Applications' regular programming column presents a miscellany of readers' letters.

To boldly go!

Rather a long time ago David Tilley of Surbiton, Surrey, sent in a contribution concerning his Spell/ST program, a PD spell-checker. Owing to an unfortunate mishap (see STA20 for details!), only now can his contribution be printed:

My thanks to Sandra Vogel for her kind review of Spell/ST, version 3.2, in In the Public Domain in the November 1991 issue of ST Applications. Version 3.5 will, I hope, be available shortly from Goodmans International.

As Sandra pointed out, besides checking spelling, the program detects the dreaded split infinitive. Star Trek's 'To boldly go' is, perhaps, the most famous example. But those of us with less licence to murder the English language might like to know a method a spelling- or grammar-checking program can adopt for their detection. It will find most, but very occasionally is totally and (without a great deal more effort with parsing) unavoidably wrong!

We wish to detect the two-word sequence: 'to <adverb>', where, in the famous example, the adverb is 'boldly'. Assuming such a program has access in succession to the letters of all adjacent words in the arrays: 'first' and 'second', the method is as follows (in a 'pseudo-code', assuming upper-case letters have somehow been converted to lower-case):

```
IF length(first) = 2 THEN
  IF first = 'to' THEN
    BEGIN
      test_for_ly_adverb(second)
      test_for_non_ly_adverb(second)
    END
```

The trouble is that some words ending in 'ly' are

not adverbs at all. The pseudo-code for procedure 'test_for_ly_adverb' is:

```
IF (L = length(second)) > 3 THEN
  IF second[L-1..L] = 'ly' THEN
    IF NOT ly_verb(second) THEN
      report_split_infinitive
```

All adverbs ending in 'ly' have more than three letters. 'ly_verb' is a function which is set to true when the following verbs ending in 'ly' are detected:

```
ally rely apply bully comply
dally imply rally reply sally
sully supply tally multiply
premultiply photomultiply
```

'ly_verb' is otherwise set to false. The adverb meaning 'lithely' is ignored, and there's no need to include 'ply'.

The procedure 'test_for_non_ly_adverb' reports a split infinitive if 'second' is one of the following:

```
all far not also both even ever
just soon well often never quite
almost hereby rather
```

This is not a complete list, but sufficient for most purposes.

Thanks for this, David, and once again, my apologies for the delay.

RAMdisks

One of the most useful utilities for program development is a good RAMdisk. Particularly if you are working from floppies, a RAMdisk can dramatically speed up the edit-compile-link-test process. For those new to the programming world, a RAMdisk is a program

that sets aside a portion of your ST's memory, and makes it look just like a floppy or hard disk. Files can be copied to and from the reserved area very quickly. However, when the machine is turned off, the contents of the RAMdisk disappear.

The speed of RAMdisks makes them particularly good for storing working copies of files, or the temporary files generated by compilers. There are many RAMdisk programs in the public domain, some with extra bells and whistles. These include the ability to survive a warm reset; automatic compression of files written to the RAMdisk, and automatic copying of files into the RAMdisk as the RAMdisk is created.

One of the more widely-used PD RAMdisks is a program called THE ETERNAL. However, the original version of the program was not compatible with all STs. In an extract from a long letter, **Barrie Stott** of Bolton describes some of the changes he made to the program, and raises some questions:

With large RAM, a RAMdisk which survives reset is a useful program. The ETERNAL RAMdisk did not work on my machine so I disassembled it and made it work. Before too long, I had several versions, some for one RAMdisk and some for two, with several sizes involved. To get a new one meant modification of source and reassembly. I now have one which is reconfigurable without reassembly, which allows one or two RAMdisks, and which can load the whole of the disk on which it sits into the E: RAMdisk.

** The way the program works on first entry from cold is to set up the RAMdisk and relevant variables such as \$42E and \$436 and then do a reset. This reset is a carry-over from Eternal which I have never understood. Have you any idea why a reset is required and why the relevant processing cannot be done from within the program?*

** For the program to work, I need to know the amount of RAM in the machine. At present this is set to 4 meg and can be changed by a reconfigure. Is there a simple way to size the machine without having to ask the user?*

** Normally, there will be several programs in the AUTO folder of which one (usually the first) will be the RAMdisk. Once the whole of A: is loaded to E:, there is no reason why the other programs cannot be obeyed from there. I do this by having all such programs of the form *.AUT and causing all such to be obeyed from E:. Is there any way to use the code which must exist in the OS for just such a purpose?*

Taking the points in order, a reset-resistant RAMdisk operates by altering the system's idea of how much memory it has. During a cold boot, the BIOS works out how much memory is in the machine, sets itself up accordingly, clears the memory and carries on with the boot. During a warm boot the BIOS simply reads the memory details from the system variables, checks that they are valid, and then clears the memory and continues.

A reset-resistant RAMdisk operates by installing itself at the top of memory, then altering the record of the amount of memory

in the system, so that the memory appears to end just before the RAMdisk. This is done by writing into the system variable 'phystop' (\$042E), which holds the system's idea of the end of usable memory. On any subsequent warm resets, the reserved area above phystop containing the RAMdisk files is untouched, as the system does not know it exists.

The reset during RAMdisk installation is required to allow the system to be set up cleanly. Imagine an ST with a reset-resistant RAMdisk in the AUTO folder of its boot disk. When the machine is turned on, it goes through the cold boot routine described above. Now, by the time the RAMdisk is executed, the BIOS has already set itself up for the real memory size, and simply changing phystop will not do anything useful. The area used for the RAMdisk will include the screen and the system stack. These will have to be moved, and the only legal way to do this is to force the BIOS to set itself up again for the new memory configuration: a warm reboot. It is not sufficient to simply move (!) the screen and stack yourself: there is no way of knowing how many other internal system pointers and structures are set up for the old configuration. During the warm reboot, the BIOS reads the fiddled phystop value, and initialises everything accordingly.

Moving on to the second question, there are several ways to determine the amount of memory in the machine. Firstly, you can examine the value of phystop before the RAMdisk program fiddles with it. The variable is set to the address of the byte beyond the last usable byte of memory. The expected values for common ST memory configurations are shown in Table 1. However, if another program that alters phystop runs before the RAMdisk, phystop will contain different values...

As an alternative, the memory size can be determined at a much lower level, by interrogating the system variable that holds a copy of the MMU's idea of the memory size. The MMU (Memory Management Unit) is the chip that controls the memory hardware. The relevant system variable is memcntl (\$0424). Only the bottom four bits of this byte are used, with the following meanings shown in Table 2.

Table 2 is composed using official Atari information. However, some entries in the table may not be accurate - I have only ever heard of 512K, 1M, 2M, 2.5M and 4M as viable configurations. Disassembling the ROM code that deals with sizing the memory, it looks as though what is specified as a bank size of '128K' in the table, is actually taken to mean 'no memory in this bank'.

With regard to the question about continuing the boot from the RAMdisk once it has been installed, as far as I know there is no legal way to continue the AUTO folder execution from a device other than the boot disk. When the system executes the AUTO folder, it does so by doing a search for \AUTO*.PRG using the GEMDOS Ffirst/Fsnext functions on the drive whose number is held in the system variable _bootdev (\$0446 word). By the time the RAMdisk program has been executed, the search is already set up, and it is probably too

late to change the boot drive. The only time that it seems to be possible to fool the system is when it is executing a boot sector program. At this time, writing into _bootdev can alter the boot device. This is how some 'boot from drive B:' programs work.

Example programs

To illustrate some of the points about reset-resistant RAMdisks, Listing 1 gives assembly language source for a simple RAMdisk. The program was cobbled together a long time ago from an Atari RAMdisk program that was not reset-resistant, and did not work very well; and a reset-resistant program by John Harris. It is not terribly sophisticated - to change the size or the device letter requires reassembly, but it should serve as a good base for further development.

The program is designed to be executed from the AUTO folder. When started, the program begins by setting up some internal variables concerned with the RAMdisk operation, and then checks that there is enough memory for the RAMdisk. If all is well, phystop is moved down, and part of the RAMdisk program copied into the memory above it. The code then sets a flag to indicate that phase 1 of the installation is complete. The location used for the flag is one of the spare vector slots in low memory: this area is not cleared during

the warm boot. After this, a warm reset is triggered by jumping through the system reset vector. When the program is executed again, following the warm reboot, it detects the phase 1 flag, and simply wires the RAMdisk code above phystop into the system.

A similar technique could be used to make a reset-resistant printer spooler. Another case where moving phystop can be useful is for testing programs. It is common to write software on a machine with a large memory, as it makes the development process easier. However, users may want to run the final program on smaller machines. To check whether the program will run correctly under these conditions, phystop can be moved down to emulate a 512K ST. Listing 2 contains assembler code for a small program to demonstrate this. By altering the definition of 'mem512', according to the values in Table 1, other ST memory configurations can be tested.

Finding total free memory

While on the subject of memory, here's a tip sent in by John Eason of Sutton. The problem he set out to solve was to find the total free memory available to a program. The operating system call Malloc (GEMDOS \$48) can be used to find the size of the single largest block of free memory, but there is no direct way to get the total free memory. To get around this

Table 1: Expected values of phystop (\$042E) for common ST memory configurations

Machine memory	phystop value
512K	\$080000
1M	\$100000
2M	\$200000
2.5M	\$280000
4M	\$400000

Table 2: Values of memcntl (\$0424) for various ST RAM configurations.

ST RAM is divided into two independent banks, called bank 0 and bank 1. The value of the lowest four bits of memcntl indicates the amount of memory in each bank. x indicates a bit whose value is unimportant.

Bit pattern	Bank 0	Bank 1	Total memory
xxxx0000	128K	128K	256K
xxxx0001	128K	512K	640K
xxxx0010	128K	2M	2.125M
xxxx0011	-	-	Reserved
xxxx0100	512K	128K	640K
xxxx0101	512K	512K	1M
xxxx0110	512K	2M	2.5M
xxxx0111	-	-	Reserved
xxxx1000	2M	128K	2.125M
xxxx1001	2M	512K	2.5M
xxxx1010	2M	2M	4M
xxxx1011	-	-	Reserved
xxxx11xx	-	-	Reserved

limitation, John came up with the short C program in Listing 3. He writes:

The program loops, finding the largest free block. Allocating it, adding its size to the total, and storing its address until Malloc(-1) returns zero. Then it Frees all the blocks and reports the total. I've found that generally it will only show one block free unless you fragment the memory by using something like a resizable RAMdisk and resizing it a few times.

Porting to other compiler and assembler systems

Listings 1 and 2 were written using the old Metacomco ASSEM v1.2. The code should port easily to other assemblers, although the conditional assembly directives that precede

the code proper in Listing 1 may need altering. These are used to check that the drive letter and RAMdisk size are valid before allowing the assembly to proceed. Listing 3 is written in Lattice C, but contains nothing likely to complicate porting to other compilers. Make sure that 'block' and 'total' are 32 bit variables - if your C compiler uses 16 bit ints, declare these variables as longs.

Next month

Next month Programmers' Forum will print more questions and tips from readers' letters. Keep the letters coming in - the more we receive, the better the column gets! Hints on any subjects, or questions about programming problems should be sent to the address below. All contributions, no matter how simple or advanced, are most welcome. Please include

your address on the letter, so that I can get back to you if anything in your contribution is unclear. E-mail addresses are useful too.

Please send a disk if there are large chunks of text or ASCII source code: I have no time to retype lots of material. Naturally, disks will be returned if an SAE is included.

Jon Ellis
Programmers' Forum
29 Ashridge Drive
Bricket Wood
St Albans
Hertfordshire
AL2 3SR

Listing 1

```

=====

**
**                               **
**      Static RAMdisk          **
**      =====                **
** by Jon Ellis                 **
**                               **
** Yet another RAMdisk program. This one is designed to **
** survive a warm reset and provides a 1000K disk installed **
** as device G. The program is position-independent and **
** relocates itself above phystop using techniques derived **
** from work by John Harris. The rest of the RAMdisk is **
** (heavily) adapted from an Atari freeware version.      **
**-----**
** Filename: STATIC.ASM version 1.11 Mods to: 25/03/90 **
**-----**

NOPAGE

**
** The following settings define the operation of the RAMdisk.
** The current settings provide a disk of 1000k nominal capacity
** installing in drive G. A maximum of 64 files may be present
** in the root directory, and the largest device available is P.
**

drive    equ    'G'           Drive letter to be used
size     equ    1000          Disk size in K bytes
dirsize  equ    4             Root directory length in sectors
FATsize  equ    4             FAT size in sectors
prog_ID  equ    1             RAMdisk.

** GEMDOS function codes

GEMDOS   equ    1
Cconws   equ    $09
Super    equ    $20

** System variables

reset_pc equ    $000004       Value for pc after reset
sparevec equ    $000180       Spare vector for phase 1 flag
pointer  equ    $000184       Pointer to BPB after phase 1.
phystop  equ    $00042E       Last byte of all memory
membot   equ    $000432       Bottom of user memory
memtop   equ    $000436       Top of user memory
hdv_bpb  equ    $000472       Vector for BPB call on hard drive
hdv_rw   equ    $000476       Vector for read/write call on HD
hdv_med  equ    $00047E       Vector for media changed HD call
drvbts   equ    $0004C2       Bit vector for installed devices

** Miscellaneous definitions

device   equ    drive-'A'     Resulting device number
minsys   equ    $20000         Minimum space for system is 128k
magic    equ    $31415926      Value for sparevec after phase 1

** Jump table offsets

oldbpb   equ    2

```

```

oldmed   equ    8
oldrw    equ    14

```

** Offsets for the BPB

```

recsiz   equ    0
clsiz    equ    2
clsizb   equ    4
rdlen    equ    6
fsiz     equ    8
fatrec   equ    10
datrec   equ    12
numcl    equ    14
bflags   equ    16
pid       equ    18
dstart   equ    20
medch    equ    24
lastmod  equ    28
version  equ    36

```

```

**
** Ensure that no out of order parameters
** for size or device are requested.
**

```

```

IFLT device                                If drive outside range A-P fail.
FAIL
ENDC
IFGE device-16
FAIL
ENDC

```

```

IFLT size-32                              If size outside range 32-2000 fail.
FAIL
ENDC
IFGT size-2000
FAIL
ENDC

```

```

**
** The program starts here - note no use of the TEXT
** section in order to allow position-independence.
**

```

```

main:    pea    signmsg(pc)              Print our sign on message.
         move.w #Cconws,-(sp)
         trap   #GEMDOS
         addq.l #6,sp

         lea    oldSSP(pc),a6             a6->storage for old SSP.
         move.l #phystop,a5              Address memtop and phystop.
         move.l #memtop,a4
         clr.l  -(sp)
         move.w #Super,-(sp)             We need supervisor mode to set up
         trap   #GEMDOS                  the program.
         addq.l #6,sp
         move.l d0,(a6)
         cmp.l  #magic,sparevec          Save the old SSP.
         beq    phase2                   Has phase 1 been completed OK ?
                                         Yes, so do phase 2 installation.

**
** Phase 1 installation.
**

```



```

phase1:  pea    p1msg(pc)          Print the phase 1 message.
         move.w  #Cconws,-(sp)
         trap    #GEMDOS
         addq.l  #6,sp
         move.l  #size,d0          Fetch the number of clusters.
         lea     bpb(pc),a0        Address the BPB to set it up.
         move.w  rdlen(a0),d1       Fetch the root directory size,
         add.w   fsiz(a0),d1        add in the size of two FATS.
         add.w   fsiz(a0),d1
         move.w  d1,datrecl(a0)     Fix up the first data cluster.
         ext.l   d1                Sign extend before conversion.
         lsr.l   #1,d1             Convert sectors to clusters,
         sub.l   d1,d0             and calculate how many free data
         move.w  d0,numcl(a0)       clusters we have. Fix the BPB.

```

```

; Having fixed up the BPB to cope with the requested
; parameters, the checks for memory size must be done.

```

```

         move.l  #(size*1024),d0    Total disk size for initialisation.
         add.l   #rdisk-bpb,d0      Add in the code and data overhead.
         move.l  #501FF,d1          We require 512 byte alignment for
         and.l   d0,d1              the value of phystop for an obscure
         beq.s   1$                reason. Skip if already aligned.
         and.l   #FFFFFF00,d0       Blank the LS 9 bits and add 512.
         add.l   #512,d0
1$:      move.l  d0,d1              Total memory required.
         add.l   membot,d1          Check to see if installation will
         add.l   #minsys,d1         leave at least a minimum for the
         cmp.l   (a4),d1            system.
         bge.s   abort             Abort if not enough memory.

```

```

; Alter the system variables to actually splice the
; program into the system. The program contains self
; modifying code.

```

```

         sub.l   d0,(a5)           If all is OK, fix up phystop.
         lea     jump(pc),a1        Point to the jump through vectors.
         move.l  hdv_bpb,oldbpb(a1) Copy the current vectors into the
         move.l  hdv_med,oldmed(a1) jump points.
         move.l  hdv_rw,oldrw(a1)

```

```

; Now relocate the BPB and supporting routines
; up above the altered phystop and finish phase 1
; with a system reboot.

```

```

         move.l  (a5),a1           a0 addresses the BPB, point to the
         move.w  #rdisk-base,d0     target area (=phystop). Calculate
         lsr.w   #2,d0             how many long words to move, and
         move.l  (a0)+(a1)+         then relocate the program.
         dbra    d0,2$
2$:      move.l  #magic,sparevec     Signal 'phase 1 all done'.
         move.l  (a5),pointer       Save the address of our BPB.
         move.l  reset_pc,a0        Fetch the value for pc after reset.
         jmp     (a0)              Bye bye.

```

```

**
** Not enough memory to install.
**

```

```

abort:   pea    abmsg(pc)          Print the abort message and quit.
         move.w  #Cconws,-(sp)
         trap    #GEMDOS
         addq.l  #6,sp
         clr.l   sparevec          Clear the installation flag.
         bra.s   exit

```

```

;-----

```

```

**
** Phase 2 installation, entered with a6->oldSSP.
**

```

```

phase2:  pea    p2msg(pc)          Print the phase 2 message.
         move.w  #Cconws,-(sp)
         trap    #GEMDOS
         addq.l  #6,sp

         move.l  pointer,a5         Fetch the address of the BPB.
         move.l  a5,d0             Calculate the addresses for the new
         add.l   #rbpb-base,d0      hard drive vectors using their
         move.l  d0,hdv_bpb        offsets from the base address in
         move.l  a5,d0             phystop. Do it for the BPB, media
         add.l   #rrw-base,d0       change and read/write routines.
         move.l  d0,hdv_rw
         move.l  a5,d0
         add.l   #rmed-base,d0
         move.l  d0,hdv_med

         move.l  a5,d0             Fetch the base address and use it
         add.l   #rdisk-base,d0     to set up the final BPB entry.
         move.l  d0,dstart(a5)
         move.l  #2,medch(a5)       Set the medium changed flag.
         move.w  drvbits+2,d0       Now set the appropriate device bit.
         bset    #device,d0         This code only works for devices

```

```

         move.w  d0,drvbits+2      A-P.

```

```

; Tidy up and leave now.

```

```

exit:    move.l  (a6),-(sp)        Go back to user mode, returning
         move.w  #Super,-(sp)      the old SSP.
         trap    #GEMDOS
         addq.l  #6,sp
         clr.w   -(sp)            GEMDOS call Term.
         trap    #GEMDOS          Goodbye.
         rts                    Should not ever happen.

```

```

**
** Installation variables.
**

```

```

oldSSP:  dc.l    0                Storage area for the old SSP.

```

```

signmsg: dc.b    13,10,'          ',27,'p'
         dc.b    ' Static Ramdisk '
         dc.b    27,'q',13,10,13,10
         dc.b    'by Jon Ellis',13,10
         dc.b    'Last modified on 25th March 1990',13,10,0
p1msg:   dc.b    13,10,'Phase 1 installation',0
p2msg:   dc.b    13,10,'1000k non-volatile, drive '
         dc.b    drive,',',13,10,0

```

```

abmsg:   dc.b    ' aborted: not enough memory'
         dc.b    13,10,13,10,0

```

```

;-----

```

```

**
** Define the BIOS Parameter Block (BPB) for
** the RAMdisk. 'base' is defined as a synonym
** for 'bpb' to clarify some code. The BPB is
** extended with some extra information fields:
**      Offset      Function
**      18          Program identifier (W)
**      20          Start address of the actual disk space (L)
**      24          Medium changed flag to force read (L)
**      28          Last modification date as byte string: 'dd/mm/yy'
**      36          Version number as byte string: '1.02'

```

```

         cnop    0,4

base:
bpb:     dc.w    512                Number of bytes per sector.
         dc.w    2                  Number of sectors per cluster.
         dc.w    1024              Number of bytes per cluster.
         dc.w    dirsize           Directory sectors.
         dc.w    FATsize           Number of sectors per FAT.
         dc.w    FATsize           Sector number of 2nd FAT sector.
         dc.w    0                 Sector number of 1st data cluster.
         dc.w    0                 Number of free data clusters.
         dc.w    1                 Flags (16-bit FATS).
         dc.w    prog_ID           Program ID.
         dc.l    0                 Start address of disk space.
         dc.l    2                 Medium changed flag.
         dc.b    '05/03/90'        Last modification date.
         dc.b    '1.03'            Version number.

```

```

;-----

```

```

**
** The RAMdisk handling routines.
**

```

```

         cnop    0,4                Ensure longword alignment

```

```

**
** Routine to return the address of the BPB for
** the RAM disk. Should always return OK (the
** normal routine uses NULL as an error value).

```

```

** result = rbpb(device)
** device $04(sp).w

```

```

rbpb:    cmp.w   #device,$04(sp)    Our call ?
         bne     jump              No, go to next device.
         move.l  pointer,d0         Fetch the BPB address and return.
         rts

```

```

**
** Routine to return the media change status of
** the RAM disk. The first call has a 'definitely
** changed' result, all others result in 'unchanged'.

```

```

** result = rmed(device)
** device $04(sp).w

```

```

rmed:    cmp.w   #device,$04(sp)    Our call ?

```



```

bne      jump2      No, go to next device.
move.l   pointer,a0  Address the BPB and fetch the media
move.l   medch(a0),d0 change byte.
clr.l    medch(a0)   Clear the byte, and return the
rts                      result.

```

```

**
** Routine to handle the reading/writing of RAMdisk
** sectors. The calling conventions are those for
** the BIOS routine rwabs():
**
** rw_work(rwflag,buffer,count,recno,device)
**
** device $0E(sp).w
** recno  $0C(sp).w
** count  $0A(sp).w
** buffer $06(sp).l
** rwflag $04(sp).w
**
rrw:      cmp.w      #device,$0E(sp)  Our call ?
bne       jump3      No, go to next device.
move.l    pointer,a0  Get our pointer to the BPB.
move.l    dstart(a0),a0 Point to the bottom of the disk.
move.w    $0C(sp),d0  Fetch starting logical sector no.,
ext.l     d0          extend it to a long and use this
lsl.l     #8,d0       to do recno<<9 (512 bytes/sector).
lsl.l     #1,d0
add.l     d0,a0       Index into the RAMdisk.
move.l    $06(sp),a1  Fetch the buffer address.
bst.b     #0,$05(sp)  Writing if bit 0 set.
beq.s     chkbuf      Skip on if not writing.
exg       a0,a1       Swap source and destination.

```

; Ensure that the buffers are on even word boundaries

```

chkbuf:   move.l     a0,d0          Fetch the two buffer addresses.
or.l      $06(sp),d0
move.w    $0A(sp),d1
ext.l     d1
and.b     #1,d0
beq.s     evenbuf

```

```

oddbuf:   move.w     #63,d0        Move the sector in 64 blocks of 8.
1$:       move.b     (a0)+,(a1)+
move.b     (a0)+,(a1)+
move.b     (a0)+,(a1)+
move.b     (a0)+,(a1)+
move.b     (a0)+,(a1)+
move.b     (a0)+,(a1)+
move.b     (a0)+,(a1)+
move.b     (a0)+,(a1)+
dbra      d0,1$
subq.l    #1,d1
bne.s     oddbuf
bra.s     rwend

```

```

evenbuf:  lsl.l      #4,d1         Calculate the number of blocks that
1$:       move.l     (a0)+,(a1)+   have to be moved. The block size
move.l     (a0)+,(a1)+           is 32 bytes and the sector size is
move.l     (a0)+,(a1)+           512 bytes. We therefore must do
move.l     (a0)+,(a1)+           (sector count * 512/32) blocks or
move.l     (a0)+,(a1)+           (sector count * 16).
move.l     (a0)+,(a1)+
move.l     (a0)+,(a1)+
subq.l     #1,d1
bne.s     1$

```

```

rwend:    clr.l      d0           Signal success and return.
rts

```

```

**
** The data area required by the program.
**

```

```

jump:      jmp      $12345678      Relay for existing hdv vectors.
jump2:     jmp      $12345678
jump3:     jmp      $12345678

```

```

cnop       0,4

```

```

rdisk:     dc.l      0           The start of the RAMdisk.

```

END

**

```

** Listing 2.
** Programmers' Forum STA 24 (December 1992)
**
** Program to allow a large-memory machine to emulate
** a 512K machine for testing purposes.

```

```

**
** Assembler system: MCC ASSEM v12
** Written on 11th October 1992
**
**
** Define symbols used by the program.
**

```

```

GEMDOS     equ      1
Cconws     equ      $09
Super      equ      $20

```

```

reset_pc   equ      $0004
phystop    equ      $042E

```

```

mem512     equ      $80000      Value of phystop on 512K machine

```

TEXT

```

start      clr.l      -(sp)      All fiddling with phystop requires
move.w     #Super,-(sp)         supervisor mode.
trap       #GEMDOS
addq.l     #6,sp
move.l     d0,d7
cmp.l      #mem512,phystop.w    More than 512K in machine ?
ble.s      1$                  Skip on if not.
move.l     #mem512,phystop.w    Set for a 512K memory.
move.l     reset_pc,a0         Fetch address of ROM reset machine.
jmp        (a0)                Do a warm reset.
1$:         move.l     d7,-(sp)   All is set up - return to user mode.
move.w     #Super,-(sp)
trap       #GEMDOS
addq.l     #6,sp
pea        sign_on(pc)         Print message for the user.
move.w     #Cconws,-(sp)
trap       #GEMDOS
clr.w      -(sp)
trap       #GEMDOS

```

```

sign_on    dc.b       13,10,'Machine memory set to 512K',13,10,13,10,0

```

END

/*

```

** Listing 3.
** Programmers' Forum STA 24 (December 1992)
**
** Program to determine the total free memory
** by John Eason.
**
** Compiler system: Lattice C v5.52
** Compile options: None
** Link with C.O and LC.LIB
**

```

```

#include <stdio.h>
#include <osbind.h>
#include <stdlib.h>

```

```

void main(void)

```

```

{
    char *block_ptr[20]; /* Holds addresses of Malloc'd blocks for */
    int block, total, x; /* later Freeing */

```

```

    puts("\033E"); /* Clear screen */
    x = 0;
    total = 0;

```

```

    do
    {
        if (block = (long)Malloc(-1L))
        {
            block_ptr[x++] = Malloc(block);
            printf("Block %d has %d bytes free\n",x,block);
            total += block;
        }
    }

```

```

    while (block);

```

```

    while (x)
        Mfree(block_ptr[--x]);

```

```

    printf("\n%d total bytes free\n",total);
    puts("\nAny key to exit...");
    getch();
    exit(0);
}

```


CAD Column

Every cloud has a silver lining, the saying goes. A DXF file provided the cloud but Joe Connor found a silver lining...

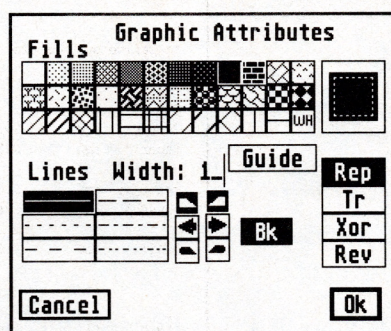
The DXF file was supplied by a client on a PC formatted 1.44Mb HD disk and the file was over 1Mb in size, double trouble for my ageing Mega and its 720Kb drive (where is that Falcon 030?).

No problem, I thought, I'll use a null modem cable to link my PC and ST together and job done. As I set the cabling up I remembered ST Zip, a file compressor I had just downloaded from CIX and it occurred to me that the .ZIP archive format is available on both platforms. A quick rummage through my PC software located an old copy of PKZIP and so I compressed the DXF file. The compressed file was only 122Kb - a compression ratio of 88%. Tentatively inserting the disk into my Atari running STZIP V2, I was pleased to see the file 'exploding' onto my hard disk without problem.

The DXF file compressed so well because in common with many CAD drawing formats DXF files consist entirely of ASCII text - read one from the desktop if you don't believe me. I suppose I should have realised years ago but better late than never.

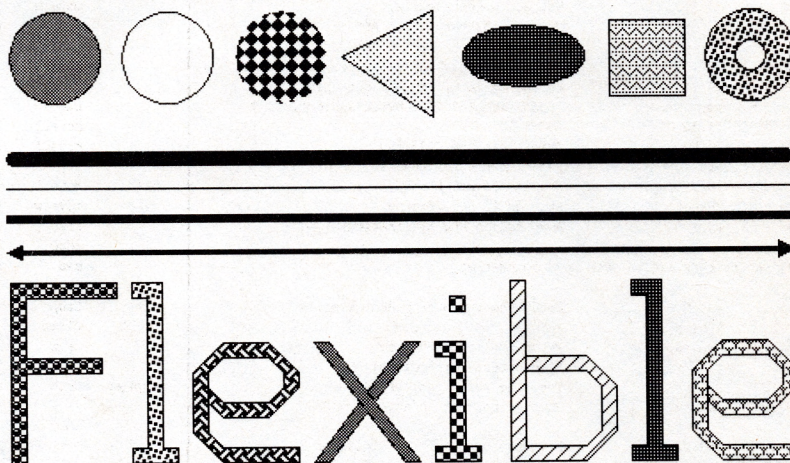
Flushed with success I resolved to back up all my drawing files each day using ST Zip rather than the slow tedious method of saving the entire drawing files to floppy. The ST Zip V2 GUI interface is (in contrast to some GEM front ends for archive utilities) really easy to use. The twin file selector columns are reminiscent of many other file management utilities for both the PC and the Mac. Entire directories can be selected and entries remain selected during scrolling making it easy to locate files. So the silver lining is that over 7Mb of drawing files can be stored on a single 720Kb floppy in around the same time it used to take to back up a single file.

MiniDraft has major ambitions



Right: the sporty new icons are an integral part of a rapidly evolving, easy to use and stylish GUI. Shareware at its best.

Left and below: using the options shown in the Graphic Attributes dialog box vector text and lines can be manipulated to generate a wide range of effects not commonly found in CAD Software.



Since the review of MiniDraft V1.0 in STA 22 the author, Jim Taylor, has not been resting on his laurels. The latest Shareware version 1.1 is now available from the ST Club and may be registered with the author for £3.00.

An enhanced version including additional features is available directly from the author for a one-off registration fee of £12.00.

Version 1.1 offers the following new features:

- ◆ Vector text at any angle
- ◆ Single line vector font for maximum speed
- ◆ Enhanced (and simplified) Hardcopy dialog
- ◆ Regular polygons
- ◆ Extra library symbols, mostly electronic
- ◆ Restorable UNDO, deletes elements in turn
- ◆ Drawing border shown on screen
- ◆ Origin/reference point indicator
- ◆ Last view and full view options
- ◆ Zoom by window option
- ◆ Large screen monochrome monitor support

The enhanced version offers all of the above and:

◆ ASCII text import; enabling notes to be prepared in your favourite Word Processor, then imported into MiniDraft.

◆ CADja ASCII file import/export; providing an easy method of exchanging files with CADja. The ASCII data format could be processed into Parts lists, etc.

◆ Tiled Hardcopy; this option, once configured for your printer, automatically generates printed output which can be pasted together to form large drawings.

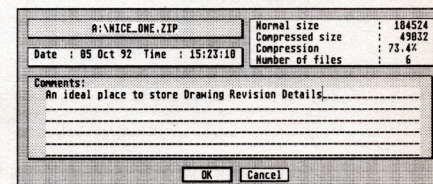
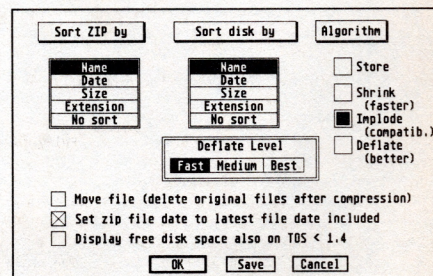
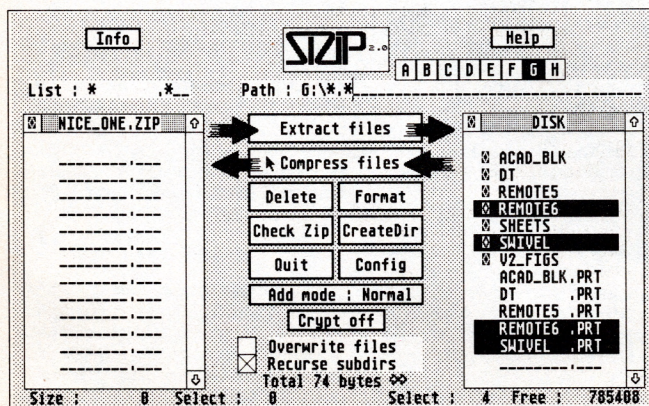
Registered users are encouraged to send in suggestions for improvements and there are currently over 60 enhancements in the pipeline. Users may expand the Symbol library by sending in Symbols in MiniDraft .BLK format together with a proposed Icon design.

Custom printer drivers can be requested if accompanied by photocopies or loan of the relevant printer documentation, contact Jim Taylor at: 12 West Drive, Cleadon, Sunderland, Tyne & Wear SR6 7SJ.

Left: drawing files can quickly be archived at the end of the day by selecting the files to be compressed using the right hand file selector, followed by a click on 'Compress files'.

Top right: files compressed using the latest Deflate algorithm can only be extracted using the latest versions of ST and PC ZIP. I used the implode algorithm for maximum compatibility.

Bottom right: clicking on the shaded title line of the left hand file selector brings up this dialog displaying the ZIP archive details.



For Sale

Seagate ST-225N Bare Hard Drive (22MB), just needs power supply, case and SCSI interface to work (available from many shops). Buyer collects. £75.00. Phone Clare 071 379 6476 (Daytime). (24)

LDW Power (v2) the best Atari Spreadsheet, fully Lotus 1-2-3 Compatible £35, Timeworks Desktop Publisher (v1). Telephone Ken on Romford (0708) 723956. Evenings. (24)

Still available, the following ST games, all originals with manuals: Elite, Corruption, Jinxter, Castle Master, Life and Death, Conflict Europe, Red Storm Rising. Call S. O'Connor on 081 748 5435 after 6.30pm. Each game £10. (26)

Dream STE total working set-up (selling because of Miss 456 Windows). Hardware: 4MB STE, 30MB H/D, SM124, SF314 3.5" drive, optical mouse, Alfa Data tracker ball, M-105 Datascan Professional 5" scanner. Software (mainly on ST Applications' recommendations): TOS 2.6 (Blitz), neoDesk, Codehead Hotwire, Multi-desk & Maxifile, Harlekin 2; non-PD utilities inc. QuickST3, C-Font, Image-copy, Mouse tricks (inc. Joybuttons), GDOS, UIS; WP & DTP: Protext 5.5 (inc. French Dict. & Thesaurus), Redacteur 3, Calligrapher Pro, PageStream (& PageHelp), Fontkit+ 3, masses of fonts, etc. Games: Oxford Chess, Proflight, Monkey Island, Large Vault, Chameleon, Superb7 or Mouseboot, DC-Stuffer, Monster, BigST, FastCopy. (All Auto and Acc's sorted and trouble-free.) All manuals and documentation. Complete ST Applications mags. Offers over £800. Telephone: Cambridge (0223) 249889.

Golden Image handheld scanner. Works with 520 up to 4MB models, scans at 100-400dpi. Comes with TouchUp software. Save scans as IMG,

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Please use the form on page 58.

TIFF, etc. Used a few times only - bargain at £85. Call Pete on 081 539 9729. (24)

STE 4Mb + Atari 20Mb Hard Disc, Colour and/or Mono Monitor, Protext V5. Timeworks DTP, Lattice C, Tempus, Fontkit Plus. Tel 073081 6602 (evenings) or 0273 524184 (Office). Midhurst Sussex. Will deliver up to 50 miles. £550. (24)

Golden Image Hand Scanner with Touch-Up Software, £75. Megapaint 11 Drawing Package £50. 32MB RLL Bare Hard Drive £60. Call Frank on 0279.434168 (home) or 0438 782551 (work). (24)

ST Formats issues 15-34, (except 16,28), £1 each, or £17 the lot. Cadaves, Golden Axe, £5 each. F-19 Stealth £9. The Ultimate Ripper £10. Tel Andrew on (0767) 882483. 82A Clanconnell Gardens, Waringstown, BT66 7RR. (24)

1040 STFM, d/s drive, TOS 1.2, blitter chip, Blitz cable and all "Summer Pro-

motion" games (app. 22) + any PD utilities you want: £200. Call Christian on 0395 68227.

Power Computing Series 900 48Mb Hard Disk Drive. Moulded plastic casing and DMA through. £200. Phone Mark on 0968 674408. (24)

Atari SC1224 Colour Monitor with Leads - £99. Cubase V 3.1 (Latest issue) with original manuals and Dongle, and six Midi files - £150. Phone 0603-868381 (Norwich). (25)

Swap HiSoft C, K & R the C programming language, Flair Paint, and 1st Word Plus for Superbase Professional or a Mono Atari Monitor. Telephone: 0623 654645 after 6pm (Alan). Leave a message if I'm unavailable. (25)

CASIO FZ Sample disks: Huge library of quality sounds. Also, Soundpatches for most major synths. Sale or swaps. Ring for details. Andy - (0532) 430177. (26)

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Hawk Colibri hand scanner. OCR - Instant loading from cartridge, very quick efficient recognition (up to 135 chars per second!), can save font libraries to reduce "learn" time; and text in ASCII/1st Word formats. SCANNER - 32 (1-4 bit) grey levels, 100-400dpi + Flair-paint, HJB Paintplus, Scansoft, power pack, manuals, interface. STW's best hand scanner/OCR software - BOTH FOR £150. Aladin Mac emulator V3 with roms + Startup files - £30. Phone David after 6pm on (0604) 586387 (25)

Atari ST Hard disc 20 Meg, DMA to SCSI to MFM, (SCSI or MFM Hard drives can be added). Uncased with Spectre GCR Emulator. All necessary software installed, works perfectly: £350 ono or may split. Telephone: 081 6771294 (25)

Prospero C Compiler - £20, Prospero Pascal - £15, Aztec C Compiler - £20, Tempus 2 Editor - £10, HiSoft Wercs - £10, STOS Basic - £10. All complete with manuals. Cash and Collect - Birmingham Area. Phone 021 777 7302 anytime. (24)

Games: Metal Mutant - £5, Conflict - £5, Final Conflict - £5, Sim City - £5, Prince - £5, Elvira - £10, Nam 1965-1975 - £10, UMS2 - £10; Applications: Virus Killer V3.9 - £5, K-Graph 3 - £20, Newgen V4 - £10, Quick ST2 - £10, Monulator - £10, Hyperpaint 2 - £10, Music Maker and Sampler Kit - £10, and Others, Joystick - £5, 1/2 Meg Upgrade - £10. Call Richard Barrett 0924 492766 after 6pm. (24)

Pagestream 2.1 Unregistered - £80.00 - 0509-673999. (24)

Atari STE Computer, 2Mb Ram, 1Mb Floppy, Mouse, boxed with manuals and some software, excellent condition. Quick Sale £210 - No Offers. Also ST Fast Basic v1.5b cartridge £10 and Mastersound 2 cartridge £15, Tel Michael (091) 5846284 after 6pm. (24)

F15 Strike Eagle 11, Tempus 2, Expert

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If you would like to see your software featured in the ST Applications Authorware column please send us a review copy of the software and a rough outline of the advertising copy you would like to be printed.

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The complete morse trainer and simulator, with realistic 'on-air' emulator and integral editor, with complete control of your listening equipment. In addition to sending, your Atari can also receive and decode morse from your own key using the supplied interface cable. Usable by novices and professional radio operators alike. Send Cheque/PO for £29.99 payable to Boscad Ltd at: 16 Aytoun Grove, Balbridgeburn, Dunfermline, Fife, KY12 9TA. Telephone (0383) 729584 evenings for technical information. RAE Morse Test

Selectable letter/number groups, thinking time, note pitch, morse generation from keyboard for CQ; plus save to disk, etc. Instruction manual and disk for £7 or SAE for more details. R L Tuft, 62 Admirals Court, Thirsk, North Yorks. YO7 1RR. Telephone: 0845-525082

Pulser

A low-resolution programme which cycles the colours as you draw ... and keeps them moving. Create stunning graphics with movements. Every circle, line, square, ray etc can PULSE in any direction, all on the screen at the same time. £7.50 inclusive or £2.50 (refundable on upgrade) Demo 1 double sided or 2 single sided disks (state which). David J Fright, 113 Waytemore Road, Bishops Stortford, Herts.

STEN

ST ENthusiasts disk magazine - for your copy send a disk + SAE to: Dave Mooney, 14 School Road, Morning-side, Newmans, Lanarkshire.

SynTax

The ST adventure magazine on disk! Reviews, solutions, hints, special fea-

tures and much, much more. Runs in colour only. Produced bi-monthly. SynTax costs £3.50 an issue, £20 for a year's subscription. Cheques made payable to S. Medley should be sent to: 9 Warwick Road, Sidcup, DA14 6LJ.

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Clip Art

Clip Art specifically for Christian and Community Magazines. Seven disks of IMG images for DTP programs supplied with a printed picture catalogue of every image. Cost: £3 per disk plus P&P: total of £23 for the set. Cheques payable to: Peter Kempley, KemCom Designs, 21 Chart House Road, Ash Vale, Aldershot, GU12 5LS.

Calamus Manual

This self-tutorial guide incorporating sections on frame drawing, entering text, changing fonts and styles, importing text and images, drawing boxes and lines, loading, saving, printing, text rulers, headers and footers and page numbers. Available at £5 (including postage) from: David Waller, The

Sandon School, Molram's lane, Great Baddow, Chelmsford, Essex, CM2 7AQ. Cheques should be made out to 'Sandon School'.

Genealogy

Newgen, my genealogy program, runs on any ST(E) or TT and is easy to use; it will print family trees, etc. Send large SAE for details or £17 for program. E G Richards, 2 Peckarmans Wood, London SE26 6RX.

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Star LC10 Printer. Excellent condition with Manual and Connector Lead for Atari. Boxed £75. Mr. Middleton, 10 Rosewood Crescent, Clyst St. Mary, Exeter, Devon, EX5 1QW. (24)

Lisp for the ST. Complete implementation by Metacomco, £20. Lisp, by Winston and Horn. The 'bible' for all Lisps - £10. Introduction to Modula - 2 by P.D. Terry - £5. Software Tools by Kernighan and Plauger - £11. All mint condition. Postage negotiable - depends on how many you buy! Phone 0738-37165 (evenings). (24)

Mega4, TOS 1.4, PC-Speed, Dos 3.3 - £330. SM125 Monitor - £50. Data-Pulse 105Mb Hard drive - £250. Timeworks 2 - £30. Data Manager Professional - £10. MIG29 Fulcrum - £10. Partner (Timeworks) - £10. All items boxed. Magazines (ST World/User/Format) - Make me a cheap offer! Phone Mike on 0332-810785 (Derby area). (24)

Tandy DMP 901 Printer (Same as Citizen 120D) 9 Pin, Tractor Feed or Friction Feed. Included is a Cut Sheet Feeder, (Normally sold separately at about £50). Plus several unused ribbons. Manuals included and power lead, computer connecting lead suitable Atari, PC etc. All for £85, or £75 if buyer collects. Reason for Sale - Upgraded to 24 pin Colour. Phone Bill Tel: - 061-962-6866 (South Manchester). (24)

Data Manager Professional - Super Base Personal - £15 each, Degas Elite - £10, SBA Cash - £25. Tel 0422-204199 anytime. (25)

Golden Image Handscanner, in near mint condition - used only twice. Quick sale due to change of computer. Original price £149, My price £100 ono. Call Hilroy in the evenings (or leave a message during the day) on 081-851-2403. (25)

TT/VGA 14" Colour Monitor PTC 1426. £300 ono. Tel. 0602 605377. (24)

Atari STFM 1040 1Mb Ram, 1/2 Mb Internal + 1Mb External Drives - £125, Phillips CM8833 Monitor £100, Boxed

games: Falcon (+Mission 1), Dungeon Master, UM5, Star Trek, Populous, Colourspace etc. All £8 each. Call Richard 0525 851543 after 7pm. (25)

Philips CM8833 Monitor, perfect condition. Boxed with Lead - £130. Star LC24-10. As new with spare ribbons £120 (0428) 658173 (Surrey). (24)

PageStream v2.1 - genuinely unused and unregistered - £100. Must sell, owing to financial crisis. No offers or timewasters please! Phone John on (081) 546 0993, or (0202) 527620. (24)

WERCS+ including GDOS - £15. Books: Teach Yourself C (Schildt) - £10; Compute's Learning C - £8; Atari ST Tricks and Tips - £8; Also games: will swap Lure of Temptress; Speedball 2; Wonderland; Megalomania for eg Lemmings, Monkey Island, etc, or cash offers. Tony - 081 597 6770. (24)

520 STm + SF354 Single Sided Drive. Offers around £125. (Boxed as new + Disks.) Call 0462 686227. (25)

520 ST With 2.5 Meg Ram and s/s External Drive - £180 (Unboxed so

buyer needs to collect) - Includes some software. Timeworks Swiftcalc (Spreadsheet with excellent Graphing Program) - £18. Hyperdraw £6. Atari Introduction to Sound & Music (3 disks and cartridge - £14. Tel 031-334-1114. (25)

Deluxe Paint (with animation) - £15.00, K-Word 2 word processor V2.25 unregistered - £10.00, K-Data database unregistered - £12.00, Mark Williams C update Version 3.0.6 includes complete resource editor and CDS C source Debugger with manuals - its not much use to me as I don't have version 2 to update! - £10.00. 1st Word Plus V3.1 - £20.00, F-19 Stealth Fighter - £15.00, Purple Saturn Day - £5.00, Colossus Chess - £8.00. All prices include postage in UK or deliver in St Neots area or Walthamstow. Contact Peter Wilson on Huntingdon (0480) 213 617 evenings or weekends. (25)

SWAP for ST hardware (e.g. STE or colour monitor, etc.), or £200.00, or good software: Apricot Xi, 10 Mbyte hard disk, 720K floppy drive, Microsoft

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FileTOOL is both a file manipulation accessory and a replacement file selector. FileTOOL v1.1 offers:

Multiple file copying, moving, deleting and printing.
Drive selection and file renaming.
Easy to use unique double file selector format.

To receive further details about the above SHAREWARE software for the Atari ST range, please send an SAE or £1.50 for a copy on disk. To receive information about (and often copies of) new software and upgrades, why not register with Critical Mass for only £5.00?

Critical Mass Concepts, The Fishergate Centre,
4 Fishergate, YORK YO1 4AB

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VirusTOOL provides facilities for virus removal, detection and prevention. For regular virus detection an AutoKill option is provided; this monitors the disks for viruses and prompts for deletion if they are not safe 'Antiviruses'. Also provided is a simple bootsector editor and virus/antivirus libraries. VirusTOOL can work as both an application and an accessory.

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Word, Supercalc, Basic, integral modem, Mono monitor, Mouse. Suit student as easily transported in carrying cases (smart). Call David 0968-60375 (near Edinburgh). (24)

Atari Laser SLM 804 Printer fully working £250.00 + delivery. Includes Manual + Printer Drivers. Tel 0279 656 280 - Caroline. (25)

DeskJet Ink Cartridges for sale, Black Ink Type HP 51608A. Limited quantity only at £10 each. Please phone 051 355 6675 (eves). (25)

TOS 2.06 Kit £40, Atari Internals Book £6, Hyperpaint £5, ST Basic Book £1, Lattice C V5, Devpac V2 £30. - Barry on 0224 869558, evenings. (25)

STE 4Mb, 52Mb Quantum HDD (ICD Card), SM124 Monitor, 2 Floppies, Lattice C V5, Hisoft C Interpreter, Tempus 2, Diamond Back, WP, Knife ST, Loads of Utilities + PD, Books, Mags. £850 ono. Jeff (0992) 574973. (25)

Protex V5.5, Prodata V1.2, Neodesk 3, Quick ST 3, Universal Item Selector 3, Fastcopy Pro, all for sale as one package, Original Disks plus Manuals. £130.00, or near offer. Phone Exeter 0392 66370 evenings only. (24)

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Scanner & PC Keyboard & Adaptor Board for 520 STE, Please Scanner with software with 400 dpi to save IMG etc. Would like to convert to PC Keyboard for ST. Keyboard & Adaptor Board required. Ring Abingdon 0235 - 834613 after 5pm. with details & price. Ask for Rod. (25)

Atari 800 Games Cartridges or Software on Cassette, especially anything Educational. Phone T. Murrill Mon-Fri (9.00 - 4.30) 0737 763780. (24)

Original (not budget) versions of Infocom's Hitch Hiker's Guide, Bureaucracy or Nord & Bert. Also Tenth Frame by Access. Phone Steve on 0923 265539. (26)

Contacts

ST Contacts wanted. I have a 2Mb STE and am interested in programming adventures, C, C++, Pascal, Assembly etc. Write to: Adrian Bhagat, 10 Meynell Walk, Peterborough, Cambs PE3 9RR. (24)

User Groups:- Atari ST Christian User Group. Mutual support in using the ST in all aspects of Church work. Send for our Introductory Disk. Revd. Joe Clemson, 'Woodville', Redesmouth Road, Bellingham, Hexham, Northumberland NE48 2EH. (27)

General

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STARGATE BBS: 0476-74616 V21 V22 V22BIS V23 Atari ST section; also PC, Amiga and Comms areas. Comms

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German-Speaking ST User willing to translate German Documentation and - as far as able - Text in Program and RSC Files (By straight substitution) at moderate rates. Contact Peter West at:- 38/42 Woodfield Avenue, London W5 1PA (or Phone 081-997 2218), sending Text and/or disk(s). (24)

The Ad.Lib BBS 24 hour a day on (091) 370 2659 General Interest, MIDI, Programming & Lots of mucking about. Call now for free, instant registration. Andy Curtis, 22 Alexandra St. Peltor, Chester-le-St, Durham. DH2 1NT. (24)

Help the Hungry in Africa. Please give your support to those facing drought, hunger and ruin. You can help by sending any old coins, stamps or used stamps to - OXFAM TRADING, Stamp & Coin unit, Murdock Road, Bicester, Oxon, OX6 7RF. (37)

Help

I have a GST 40E Gemlock. A full screen image on the computer is not full screen on the video screen. I am told that a modification to the computer is required. Can anyone help me in finding out what and where I can get one? R. Bounsall, 67 Cambria Crescent, Gravesend, Kent.

Is there anyone out there who uses Timeworks DTP on a 1040 ST with mono monitor, 2 disk drives and a DeskJet 500? You might be able to help me! Please ring Nick on 0582 602941.

Atari Introductions

We are offering the full series of 'Atari Introduction' software packs at special reduced prices:

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Please use the left hand side of our order form on page 57 to order these packs.

Fontkit Plus 4

The latest version of Fontkit Plus, previewed on page 10 of this magazine, will be available in the first week of November. This will include a new version of Fontswitch 4 which we shall be reviewing in issue 24 of ST Applications.

Prices:

Fontkit Plus 4 -	£24.95
Fontswitch 4 -	£14.95

Upgrades:

M: from Fontkit Plus 3 -	£8.95
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Please specify the upgrade code (M, or N) when ordering and return all of your master disks; upgrades include new manual pages. Upgrades from Trimfont, Fontswitch, and earlier versions of Fontkit will be available - details will be printed in issue 24.

The ST Club

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Full GEM-based address book programs with fully configurable label printing, telephone lists & envelope printing options. Good search and sort facilities. Comes with Address.Acc. window-based access to database when in other GEM programs. ACC will time telephone calls, send addresses to WP in keyboard buffer, has definable printer macro buttons and lots more. SAE for free info sheet. £11 UK, £12 O/Seas. Degsoft Software, 7/9 Exeter Road, Exmouth, Devon, EX8 1PN.

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	Redacteur 3 (£99)	
	Redacteur Lite (£79)	
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	WARP 9 Upgrade	
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PD & Shareware disk prices

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Guaranteed 3.5" DS disks

- Top quality boxed with labels

- Sony branded or equivalent

Box of 10 - £9.95

Disk Labels

Coloured Labels - 1.5p each

500 Sprocket Fed White Labels - £9.50

Disk Boxes

Slimpack box for 12 disks - £ 1.40

Box for 40 disks - £ 5.95

Box for 80 disks - £ 7.45

Posso stackable file for 150 - £22.95

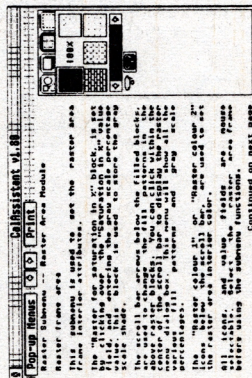
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Please insert the following advert for Issues under the following classification: / ST Contacts / For Sale / Wanted / General / User Groups. Adverts are free to ST Applications subscribers.

Warning: It is illegal to sell unauthorised copies of commercial software - All software offered for sale must be in the original packaging with manuals etc. Anyone found to be selling pirated software through the classified advert listings will be reported to the appropriate authorities. Software publishers do not normally offer user support or upgrades to users of software purchased second hand.

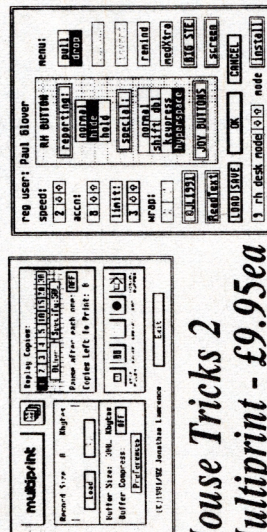
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Product News



CalAssistant - £19.95

WARP 9



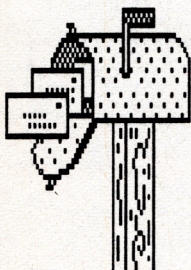
Mouse Tricks 2
Multiprint - £9.95ea



TypeWrite
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Use this space for any feedback you'd like us to read.



ST Repairs

Our Service department can repair ST's in minimum time at competitive rates. We can arrange for courier pickup and return delivery of your machine to ensure it's safety. We even have a same day service which will ensure your machine is given priority and subject to fault, completed the same day. We can fit memory upgrades, PC Emulators, Security devices, ROM upgrades, hard drives to Mega STE's etc. We offer a Quotation service for £15 for which we will examine your machine and report back with an exact price for repair. If you do not wish to go ahead with the repairs then just pay the £15. However if you do go ahead then the charge is included in the minimum charge. Please note: The minimum charge covers labour, parts are extra.

Quotation	£ 15
Min repair charge	£ 35.25
Courier Pickup	£ 11
Courier return	£ 6
Same day service	£ 15
STFM(E) PSU	£ 39.99
1Mb Internal drive	£ 39.99
A/B Boot switch	£ 4.99

Printers

Star SJ48 Bubblejet	£210
Star LC-20 dot matrix	£124
Star LC-100 colour dot matrix	£165
Star LC-24/100 dot matrix	£179
Star LC-24/200 dot matrix	£209
Star LC-24/200 colour d/m	£259

All Star dot matrix printers include 12 months on site warranty. Add £3 for Centronics cable.

STE Packs

520STE	£229
1Mb 520STE	£239
2Mb 520STE	£274
4Mb 520STE	£320
New- 8833MKII colour monitor with Lotus challenge 2	£189.99
Cable for ST/STE please specify	£9.99

DataPulse Plus

The Data-Pulse range has recently been re-designed. The Data-Pulse Plus range now offers a more compact case that cuts down on noise even more, all ports are marked, an extensive range of software utilities are now included and our range of special offer utilities has been expanded confirming our commitment to future support. We are continually improving the quality and price/performance ratio of our drives. We have recently incorporated the MAXTOR hard drive mechanisms which offer low power, cached 11ms access time, 127Mb formatted capacity, 150,000 Power on hours mean time between failures and all for a lower price than our old 105Mb drives.

- ✓ All drives are formatted/partitioned and tested ready to "plug in and go".
- ✓ Extremely low noise.
- ✓ Fully Autoboosting and Autoparking.
- ✓ DMA device selector & On/Off switch on front of case.
- ✓ DMA Out port for daisy chaining extra drives/Laser printer.
- ✓ Full metal case measuring 300mm x 285mm x 51mm (wdh), providing good shielding and monitor stand.
- ✓ High quality ICD boards including on board clock and controller software.
- ✓ All drives include Vault archiver, Backup software, Virus killer, MCP shell program, Midstudio Master demo.

Data-Pulse Plus 40Mb ICD	£ 289.99
Data-Pulse Plus 52Mb ICD	£ 319.99
Data-Pulse Plus 80Mb ICD	£ 379.99
Data-Pulse Plus 127Mb ICD	£ 429.99
Data-Pulse Plus 213Mb ICD	£ 539.99
HD Turbokit	£ 4.99

DataPulse 2 20 Mb Floptical

The New Data-Pulse Plus Floptical drive, is a 35" SCSI mechanism, ICD host adaptor, high quality Data-Pulse Plus case and psu. The drive is capable of storing over 20Mb of data on a single 35" Floptical disk and can also read 720K and 144Mb 3.5" floppy disks. The average access time is just 65ms and the data transfer rate is 200K per second, 6 times faster than floppy disks. The floptical is available either as a stand alone unit or as an upgrade to new and existing Data-Pulse(Plus) users where it would be ideal for fast data backup from hard drive.

20Mb Floptical	£439.99
20Mb Floptical disk	£24.99
Floptical Upgrade to Data-Pulse (Plus) HD	£319.99
Diamond Back II	£29.99
New Unlimited Storage capacity	

Aries Upgrades

The Aries Upgrade board is an in house designed, Multi layer board utilising high density ZIPP RAM chips. The board has been designed to allow progressive upgrading from the base 512K up to 4Mb. The board does require some soldering but once installed is very reliable. The board is hand assembled in our workshops by skilled technicians and is fully tested before despatch. It also comes complete with fitting instructions and test software. Our technicians can fit the board to any ST for a small fitting charge. We can arrange courier pickup and return to ensure fast turn around. A same day fitting service is also available. Please phone for further details of courier and same day service.

Aries Upgrades (any ST(FXMI))

512K Aries board	£ 39.99
2Mb Aries board	£ 79.99*
4Mb Aries board	£ 129.99*
Courier pickup	£ 11
Courier return	£ 6
Fitting charge	£ 15
Same day charge	£ 15

Please check the configuration of your machine before ordering.

* = Special offer

Data-Net

Data-Net is a high speed network solution developed in house at Ladbroke Computing for the ST/STE. Ladbroke Data-Net hardware consists of an unobtrusive cartridge which plugs into the cartridge port of your ST/STE and connects via Coaxial cable and BNC connectors. The Data-Net hardware is fully Lantech compatible and can be used with Universal Network software. The Universal Network software is a Multi tasking network package which does not tie up the server whilst drive or printer accesses take place. It allows the sharing of Hard drives and Centronics printers anywhere on the Network. Nodes can also Auto boot accessories from a host's hard drive.

NEW PRICE

Data-Net Node Consisting of 1 Datanet hardware node + 1 Universal Network Node software only
£99.99

Silhouette

Silhouette is a bit image and vector graphics drawing program with Auto tracing. The package offers Auto-Tracing, Beziers, B-Splines, High resolution, gray scales, Supports FSM-GDOS, requires 1Mb ST or 1T High resolution. Imports: MG, DEGAS, TINY, MacPaint, GEM, SGF, Exports: MG, GEN(1.3), SGF, DXF, EPS(Postscript).

Only £60

Aries SIMM's

Special Offers

512K SIMM Upgrade for STE	£11.99
2Mb SIMM Upgrade for STE	£47.99
4Mb SIMM Upgrade STE	£92.99

Please check configuration before ordering

The New Falcon 030 £479.99

1Mb RAM, 16MHz 32 bit 68030 processor, 32MHz 56001 Digital Signal Processor, 8 channel 16 bit CD quality DMA sound chip, Microphone input for stereo sound digitising, 65536 colours in 320x200 mode, 256 colours in VGA mode. SCSI II bus, Internal IDE hard drive interface, Multi TOS Multitasking operating system. Phone for VGA monitors, IDE hard drives, SCSI hard drives etc.

GI Hand Scanner £119.99

The Golden Image Hand Scanner for the Atari ST features a 105mm scanning head, variable contrast control, user selectable scanning resolutions of 100, 200, 300 and 400 Dpi, one letter mode for high contrast B/W images and 3 photo modes for various shades of grey. The high quality hardware is backed up by two of the most respected graphics packages around. Migraph's Touch Up for scanning and editing hi-res and grey scale images and Deluxe Paint art package for lower resolution colour.

- ✓ 100, 200, 300, 400 Dpi scanning resolution
- ✓ 105mm scanning head
- ✓ 1 letter mode, 3 photo modes
- ✓ Includes Touch Up
- ✓ Includes Deluxe Paint

Scanlite is an accessory which allows the scanning and saving of files whilst your favourite editor or DTP package is running. The accessory supports Golden Image, Migraph, GenScan and DAATAscan Hand Scanners. £20

GI External drive £54.99

The Golden Image External 3.5" Floppy drive for the Atari ST features 720K formatted capacity, double sided double density, Through port compatibility for older ST/STM machines, external PSU.

- ✓ 720K Formatted capacity
- ✓ New Low price (no track counter)
- ✓ External Power Supply
- ✓ Daisy Chain Through Port

The NEW Brush Mouse

- ✓ 150 Dpi resolution
- ✓ 500mm/SEC Tracking speed
- ✓ Switchable between ST/Amiga
- ✓ Opto/Mechanical Mechanism
- ✓ Includes Deluxe Paint ST
- ✓ Direct mouse replacement

£24.99 with D-Paint **£19.99** without D-Paint

GI Optical Mouse £24.99

The Official Golden Image Optical Mouse is a high quality, 3 button, replacement mouse. The fully optical mechanism means no moving parts and offers far higher reliability than opto/mechanical mice.

- ✓ 250Dpi, 500mm/sec tracking speed
- ✓ Fully Optical
- ✓ Mouse mat included
- ✓ Switchable ST/Amiga

GI Mouse

The Golden Image Opto/Mechanical Mouse offers 290 Dpi resolution, 2 Microswitched buttons for greater reliability and crisper, more positive response, Anti-static silicone rubber coated ball. Also includes mouse mat.

Only £14.99

Jin Mouse

Don't be deceived by the low price of this mouse. Mass production of the Jin mouse has resulted in a high quality Opto/Mechanical mouse featuring 290 Dpi resolution, 500mm/sec tracking speed, Anti-static silicone rubber coated ball.

Only £9.99

Ladbroke Computing International

Ladbroke Computing International are the longest established Atari dealer in the UK. We have developed an extensive customer service policy which involves testing of all Hardware prior to despatch to ensure that goods arrive in working order, offering free advice and support over the phone and keeping customers informed. Although our prices are not always the cheapest we do endeavour to offer consistently good service and backup. All prices correct at copy date 28/09/92 (while stocks last), and are subject to change without prior notice. All prices include VAT but exclude delivery. Add £5 for next working day courier delivery, add £10 for Saturday courier delivery (mainland UK only). Add £3 for postal delivery, only on items under £50 (check with staff before ordering). All prices available on Mail Order. Shop prices may differ. Shop/Mail order premises: 33 Ormskirk Road, Preston, Lancs. PR1 2QP. Open Mon-Sat 9:30am-5:00pm. Phones answered from 9:00am. Ladbroke Computing International is a trading name of Ladbroke Computing Ltd. BFPO addresses overseas, deduct 17.5% VAT and add normal UK carriage.

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GASTEINER



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London N17 9QU
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Fax: 081 885 1953

COMPUTERS

ATARI

520 STE 1/2Mb	£199.00
520 STE 1Mb	£230.00
520 STE 2Mb	£265.00
520 STE 4Mb	£305.00
1040 STE 1Mb	£299.00

MEGA STE

0Mb Without Hard Drive	£ 379.00
1Mb Without Hard Drive	£ 399.00
2Mb Without Hard Drive	£ 429.00
4Mb Without Hard Drive	£ 465.00
0Mb With 48Mb Seagate H/D	£ 579.00
1Mb With 48Mb Seagate H/D	£ 599.00
2Mb With 48Mb Seagate H/D	£ 629.00
4Mb With 48Mb Seagate H/D	£ 665.00
0Mb With 105Mb Quantum H/D	£ 679.00
1Mb With 105Mb Quantum H/D	£ 899.00
2Mb With 105Mb Quantum H/D	£ 929.00
4Mb With 105Mb Quantum H/D	£ 965.00
1Mb With 210Mb Quantum H/D	£ 999.00
2Mb With 210Mb Quantum H/D	£1029.00
4Mb With 210Mb Quantum H/D	£1065.00

STBOOK

1Mb 40Mb Hard Drive	£1275.00
1Mb 80Mb Hard Drive	£1475.00
limited quantity available	

FALCON

1Mb Without Hard Drive	£ 499.00
2Mb Without Hard Drive	£ 529.00
4Mb Without Hard Drive	£ 579.00
8Mb Without Hard Drive	£ 779.00
16Mb Without Hard Drive	£ 979.00
1Mb With 64Mb Hard Drive	£ 899.00
2Mb With 64Mb Hard Drive	£ 929.00
4Mb With 64Mb Hard Drive	£ 979.00
8Mb With 64Mb Hard Drive	£1179.00
16Mb With 64Mb Hard Drive	£1379.00

GASTEINER MEGA DRIVE

For ST, STE, MEGA ST, MEGA STE and FALCON

All mega drives now comes with:-

- * ICD host adaptor
- * Backup software
- * Comprehensive manual
- * 12 months back to base guarantee.
- *DMA in and out (with thru' port for an extra drive/laser printer)

Feature :- Fully Autobooting, Autoparking, Fast Access SCSI drive.

20 Mb 24ms (Seagate)	£199.00
50 Mb 24Ms (Seagate)	£259.00
52 Mb 11Ms (Quantum)	£309.00
87 Mb 14Ms (Quantum)	£399.00
105 Mb 11Ms (Quantum)	£429.00
125 Mb 14Ms (Quantum)	£479.00
210 Mb 11Ms (Quantum)	£479.00

All Quantums have minimum 64K Cache
Gasteiner Floptical 20Mb Drive £399.00
Gasteiner Floptical 20Mb Disks £ 24.00

Note

ICD Controller With Clock For The Above Drives, Please Add £15.00 Extra.

We will
try to
beat any
Advertised
Prices!

Bare Drives

20 Mb Seagate	£ 99.00
50 Mb Seagate	£179.00
52 Mb Quantum	£199.00
105Mb Quantum	£279.00
210Mb Quantum	£349.00
20 Mb Floptical disks	£ 24.00

Mega STE Hard Drives

50Mb	£199.00
105Mb	£300.00
210Mb	£389.00

Prices include official Atari Mega STE Kit, Atari Host-Adpt and Software

ICD Products

Ad Speed ST	£140.00
Ad Speed STC	£160.00
AdSCSI Micro Host Adpt	£ 55.00
AdSCSI Plus (with clock)	£ 69.95
AdSCSI ST	£ 59.95
Metal Case for H/D	£ 35.00
Power Supply	£ 35.00
SCSI Cable	£ 5.00
DMA Cable	£ 5.00

ICD - THE LINK

Connects an Atari ST computer to an external SCSI hard drive, floptical drive, CD Rom

£59.00